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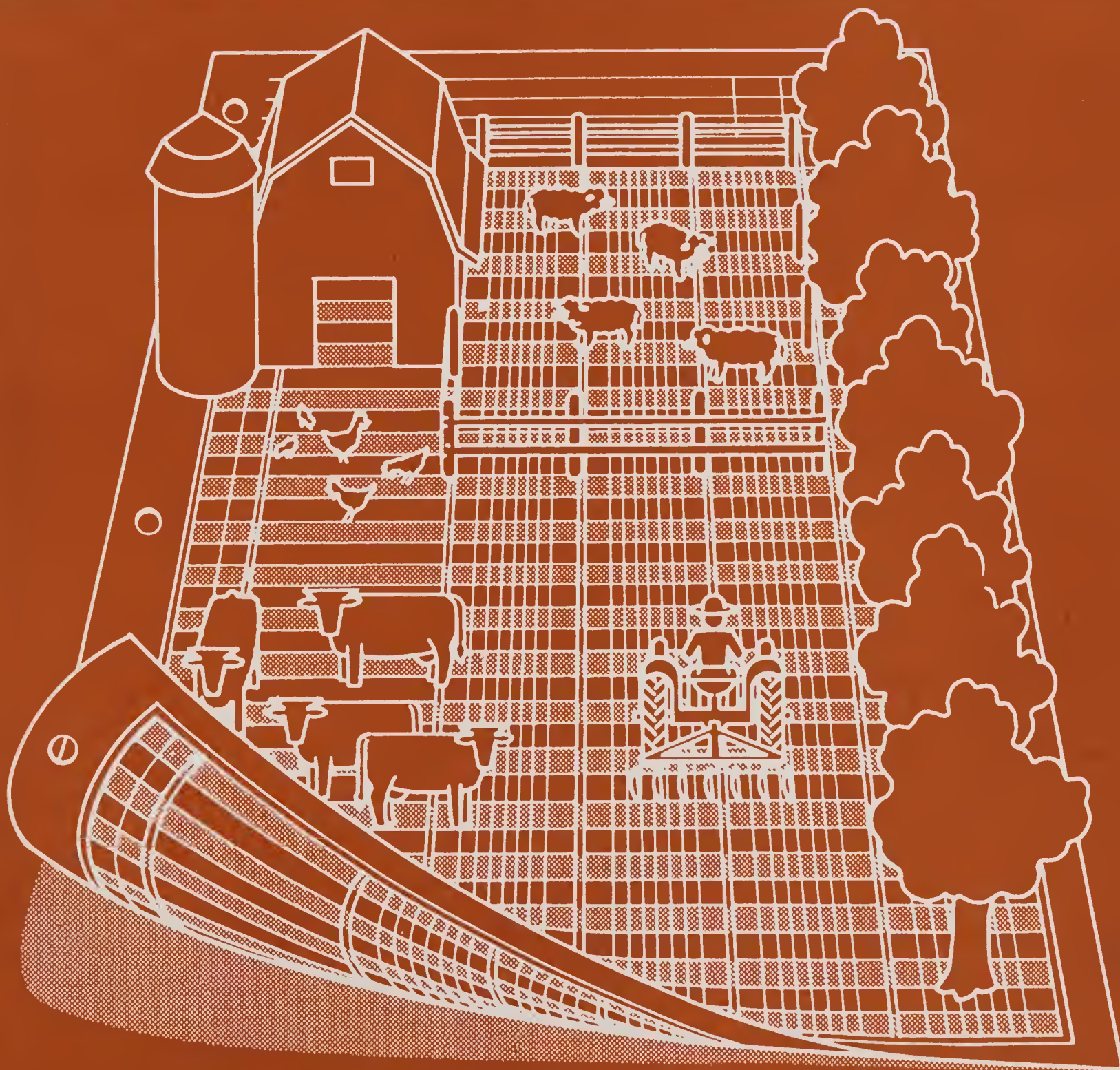
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Economic Indicators of the
Farm Sector

Farm Sector Review,
1987



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ABSTRACT

Farmers' net cash income rose 11 percent to \$57 billion and net farm income climbed 24 percent to \$46 billion in 1987. Net cash income is gross cash income, such as cash receipts and direct Government payments, minus cash expenses, such as seed, feed, fertilizer, property taxes, and interest. Net farm income reflects cash income minus cash expenses plus adjustments for noncash (like inventory change) and operator dwelling income and expenses. Growth in farm income substantially exceeded the rate of inflation. Income from nonfarm sources remained important to many farm households, generating \$47 billion in gross income, up 5 percent from 1986. Total farm debt was down 8 percent at the end of 1987. The value of farm assets rose for the first time in 5 years as farmland values stabilized or rose in most regions.

Keywords: Farm income, balance sheet, costs of production, capital flows, output, productivity.

PREFACE

This is one of five reports in the Economic Indicators of the Farm Sector series. Other reports are Costs of Production, National Financial Summary, State Financial Summary, and Production and Efficiency Statistics.

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SUMMARY

Farmers' net cash income rose 11 percent to \$57 billion and net farm income climbed 24 percent to \$46 billion in 1987. Net cash income is gross cash income, such as cash receipts and direct Government payments, minus cash expenses, such as seed, feed, fertilizer, property taxes, and interest. Net farm income reflects cash income minus cash expenses plus adjustments for noncash (like inventory change) and operator dwelling income and expenses. Growth in farm income substantially exceeded the rate of inflation. Income from nonfarm sources remained important to many farm households, generating \$47 billion in gross income, up 5 percent from 1986. Total farm debt was down 8 percent at the end of 1987. The value of farm assets rose for the first time in 5 years, as farmland values stabilized or rose in most regions.

Earnings

- o The index of prices paid rose 2 percent, led by a 17-percent increase in prices of feeder livestock.
- o The prices received index rose 3 percent. Food and feed grain price drops (6 percent and 13 percent) forced the crop price index down 1 percent, while livestock prices rose 6 percent.
- o Cash receipts from crops fell 3 percent (to \$62 billion), while livestock receipts rose 7 percent (to \$76 billion), leaving total cash receipts up 2 percent (at \$138 billion).
- o While direct Government payments increased 42 percent to \$17 billion, net CCC outlays fell from \$8 billion to less than \$200 million. Total Government outlays to the farm sector fell 18 percent (almost \$4 billion).
- o Total expenses increased 1 percent to \$124 billion. Livestock and poultry purchases grew 23 percent and capital expenditures rose 16 percent. Capital consumption and interest expense both declined 8 percent.
- o Fourteen percent of the value of domestic agricultural production was exported, compared with 24 percent in 1981. Exports of farm commodities grew 6 percent in value and 18 percent in volume during fiscal year 1987 (October 1986-September 1987).
- o The volume of wheat exported rose 11 percent, spurred by a 20-percent fall in export prices. Corn exports fell 9 percent in value but increased 26 percent in volume.

Diversity

- o Crop farms, which represented 40 percent of all U.S. farms, received 52 percent of net cash income and 72 percent of total direct Government payments. Crop receipts of cash grain farms (primarily corn, wheat, and soybean producers) dropped 32 percent (\$10 billion) from 1986, while livestock receipts of red meat farms increased 17 percent (\$5 billion).

- o Small farms (less than \$40,000 of commodity sales) were 73 percent of all farms, accounting for less than 4 percent of the sector's net cash income from farming and 81 percent of off-farm income.
- o Midsized farms (annual sales from \$40,000 to \$250,000) were 22 percent of all farms, received 37 percent of net cash income, and had 15 percent of off-farm income.
- o Large farms (sales over \$250,000) were almost 5 percent of all farms, earned 59 percent of net cash income, and had 4 percent of off-farm income.

Financial Situation

- o Farm sector equity grew by \$37 billion (6 percent). The value of farm and household assets rose \$24 billion (3 percent), while debt declined \$13.5 billion (about 8 percent).
- o The farm sector debt/asset ratio was 18.9 percent at the end of 1987, down substantially from 22.2 percent in 1985.
- o Farm real estate values, which accounted for 70 percent of total farm assets in 1987, increased 7 percent in the Northern Plains and Lake States and 9 percent in the Northeast and the Corn Belt.
- o Commercial farms (annual sales of more than \$40,000) enjoyed improved financial conditions, according to an operator survey. Twenty-five percent of commercial farms ended 1987 with debt/asset ratios of more than 0.40, compared with 35 percent in 1986.
- o Debt owed by commercial farm operators fell 17 percent. Over 80 percent of commercial farms and 77 percent of noncommercial farms generated positive net farm incomes in 1987.
- o Sixty-five percent of commercial farm businesses and 41 percent of noncommercial farm businesses had debt/asset ratios less than 0.40 and positive net cash incomes.

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Economic Indicators of the Farm Sector

Farm Sector Review, 1987

OVERVIEW

This report assesses farm sector performance in 1987. Other reports in the Economic Indicators of the Farm Sector series present information about specific aspects of sector performance. While the "Farm Sector Review" provides less detail in some areas, it covers a wider range of topics. We believe an understanding of conditions in agriculture can be enhanced by evaluating sector performance from several perspectives.

Our description of the farm sector begins with official estimates of aggregate production and income as summarized in the income accounts. The U.S. Department of Commerce's Census of Agriculture and the U.S. Department of Agriculture's (USDA) Farm Costs and Returns Survey provide data for income and expense estimates. Data from private industry are also used to estimate production expenses.

Direct Government payments and crop loans from the Commodity Credit Corporation (CCC) are important components of farm income, as revealed by USDA estimates of recoverable and nonrecoverable outlays. Data on direct payments and CCC loans come from USDA's Agricultural Stabilization and Conservation Service (ASCS).

The sector is composed of many diverse farming operations so that aggregate data can misrepresent the performance of sub-sectors. We address the diversity by presenting analyses for different sizes and types of farms. Distributions of

income and expense, by sales class, are based on the 1982 Census of Agriculture and 1979 Farm Finance Survey. USDA's National Agricultural Statistics Service (NASS) is a source of data for commodity cash receipts.

We evaluate financial performance by examining official USDA estimates of total values of farm sector assets and debts. Descriptions of recent changes in farmland values and the financial performance of commercial and noncommercial farms are based on survey data.

The farm sector remains an important part of the U.S. economy because of its linkages to other sectors. Agriculture contributes significantly to national employment and gross national product. We include estimates of total domestic food consumption and foreign purchases of commodities because much of the demand for farm products originates outside of the sector.

FARM SECTOR PRODUCTION AND INCOME

Farm output declined while the prices received for farm products rose, according to 1987 indexes. Increases in the costs of purchased livestock and hired labor resulted in higher total production expenses. Gross cash income grew as a result of higher livestock cash receipts and Government payments. The aggregate income statement shows that net farm income and net cash income grew in both real and nominal terms.

Production

We derived productivity indicators by comparing quantities of inputs and outputs. Because quantities can be measured in many different units, use of indexes facilitates annual comparisons of total inputs and outputs (tables 1 and 2). The index of crop output fell 3 percent, while the livestock output index rose 1 percent, resulting in an overall decline of farm output of 2 percent.

Area planted to principal crops dropped by 23 million acres from 1986 levels. Farm use of all nutrients declined in 1987, reflecting farmers' continued participation in acreage reduction programs and increases in set-aside requirements for the wheat and corn programs. Farm use of fertilizer nutrients fell about 2 percent, from 19.7 to 19.2 million tons. Nitrogen

use declined 1 percent compared with 4-percent declines for phosphate and potash. Gasoline used for farming fell by 200 million gallons.

Feed grain output fell 15 percent, led by 21-percent and 14-percent declines in sorghum and corn production (table 1). Hay production declined 4.5 percent, while output of food grains was almost unchanged. Cotton production registered a sharp rebound from the previous year's low output, increasing 50 percent in 1987. Sugar crop output rose 5.7 percent.

The output of poultry products (broilers, turkeys, and eggs) rose 8.3 percent in 1987, more than compensating for minor declines in meat and dairy production. Total livestock production, therefore, increased 1 percent in 1987.

Table 1--Crop and livestock production, 1984-87

Commodity	Unit	1984	1985	1986	1987	Change		
						1984-85	1985-86	1986-87
		- - - - - <u>Million</u> - - - - -				- - - - - <u>Percent</u> - - - - -		
Crops:								
Wheat	Bushel	2,595	2,425	2,092	2,105	-6.6	-13.7	0.6
Rice	Cwt	139	135	133	128	-2.9	-1.5	-3.8
Corn	Bushel	7,674	8,877	8,250	7,064	15.7	-7.1	-14.4
Oats	Bushel	474	521	386	374	9.9	-25.9	-3.1
Barley	Bushel	599	591	611	527	-1.3	3.4	-13.7
Sorghum	Cwt	866	1,120	938	741	29.3	-16.3	-21.0
Hay	Ton	151	149	156	149	-1.3	4.7	-4.5
Soybeans	Bushel	1,861	2,099	1,940	1,905	12.8	-7.6	-1.8
Cotton	Bale	13	13	10	15	0	-23.1	50.0
Tobacco	Pound	1,728	1,512	1,164	1,226	-12.5	-23.0	5.3
Livestock products:								
Beef	Pound	23,598	23,728	24,371	23,566	.6	2.7	-3.3
Pork	Pound	14,812	14,807	14,063	14,374	0	-5.0	2.2
Broilers	Pound	13,016	13,762	14,316	15,594	5.7	4.0	8.9
Turkeys	Pound	2,685	2,942	3,271	3,828	9.6	11.2	17.0
Eggs	Dozen	5,708	5,688	5,705	5,797	-.4	.3	1.6
Milk	Cwt	1,354	1,431	1,434	1,425	5.7	.2	-.6

Sources: U.S. Department of Agriculture, National Agricultural Statistics Service, Crop Production, 1987 Summary, January 1988, and Economic Research Service, Agricultural Outlook, September 1988.

Table 2--Farm sector productivity and inputs, selected years, 1970-87

Item	1970	1975	1980	1984	1985	1986	1987 1/
<u>1977=100</u>							
Output index	84	95	104	112	118	111	109
Crops 2/	77	93	101	111	118	109	106
Feed grains	71	91	97	116	134	123	105
Food grains	69	108	121	129	121	107	106
Oil crops	66	86	99	106	117	110	106
Livestock 3/	99	95	108	107	110	110	111
Meat animals	102	97	107	101	102	100	98
Dairy products	95	94	105	110	117	117	116
Poultry and eggs	93	92	115	123	128	133	143
Input index 4/	96	97	103	95	92	87	N/A
Farm labor	112	106	96	92	85	80	78
Farm real estate	105	97	103	97	95	93	N/A
Mechanical power and machinery	85	96	101	85	81	76	N/A
Agricultural chemicals	75	83	123	121	121	109	N/A
Feed, seed, and livestock purchases	96	93	114	105	105	102	N/A
Productivity index	87	99	101	118	128	127	N/A
<u>Million acres</u>							
Principal crops:							
Planted	293.2	332.2	356.7	345.1	342.2	327.3	304.5
Harvested	283.1	324.0	340.1	354.3	330.1	311.5	289.1
<u>1,000 tons</u>							
Fertilizer use: 5/							
Nitrogen	7,459	8,601	11,407	11,092	11,493	10,424	10,349
Phosphate	4,574	4,507	5,432	4,901	4,658	4,178	4,013
Potash	4,035	4,453	6,245	5,797	5,553	5,053	4,852
Total	16,068	17,561	23,084	21,790	21,703	19,655	19,214
<u>Billion gallons</u>							
Fuels for farming:							
Gasoline	4.0	4.5	3.0	2.1	1.9	1.7	1.5
Diesel	1.9	2.4	3.2	3.0	2.9	2.9	3.0

N/A - Not available.

1/ Preliminary indexes for 1987 based on Crop Production, 1987 Summary, January 1988, and other releases of the Agricultural Statistics Board, National Agricultural Statistics Service, USDA. 2/ Gross crop production includes crops not shown and cannot be added to gross livestock production to compute farm output. 3/ Gross livestock production includes livestock products not shown. It cannot be added to gross crop production to compute farm output. 4/ Includes items not shown in separate groups. 5/ Includes 50 States and Puerto Rico. Includes fertilizer for nonfarm use.

Price Trends

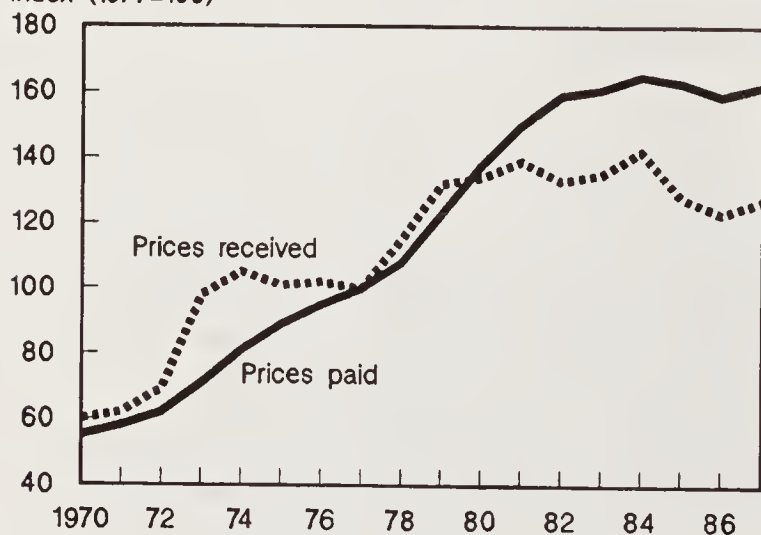
Price relationships between the cost of farm inputs and the value of output influence earnings of the farm sector. The index of prices received for crops fell 1 percent in 1987, following declines of over 10 percent in each of the previous 2 years (table 3). Prices received for oil crops, cotton, fruits, and vegetables rose in 1987, while feed and food grain prices continued a 3-year fall. The meat animal price index rose 12 percent, but poultry and eggs fell 16 percent, leaving the index of prices received for all livestock commodities 6 percent above the 1986 level.

Prices paid for production inputs rose 2 percent overall. Feeder livestock showed the largest increase in 1987 and was almost 80 percent above the 1977 level. Prices paid for farm vehicles and machinery rose 5 percent in 1987 and farm wage rates were up another 4 percent.

The prices received for all commodities gained slightly more in 1987 than the index of prices paid for all commodities, services, interest, taxes, and wages. The gap between the cost of inputs and value of output and the divergence between crop and livestock price indexes are still evident (figs. 1 and 2).

Figure 1
Indexes of prices received and paid by farmers, 1970-87

Index (1977=100)



Cash Receipts

Cash receipts from farm marketings and net CCC loans rose \$3 billion in 1987 (table 4). The \$4.7-billion increase in livestock receipts more than offset the \$1.7-billion fall in crop receipts. Crop receipts constituted 45 percent and livestock 55 percent of total 1987 cash receipts. Livestock receipts also exceeded crop receipts in 1986. However, in 1985, crops accounted for 52 percent of cash receipts and livestock for 48 percent.

Livestock marketings increased substantially in 1987 as farmers had the advantage of higher meat prices. Cattle and calf receipts rose 17 percent (almost \$5 billion), sheep receipts 16 percent, and hog receipts 6 percent. The decline in poultry and egg cash receipts and unchanged dairy receipts held the increase for all livestock to about 7 percent.

Following several years of sharp declines, crop prices began to improve during the year. Favorable growing conditions produced large harvests of major crops, although producers had reduced planted acres. Soybean cash receipts increased slightly in 1987. Wheat receipts were essentially unchanged from 1986 and remained \$3 billion below 1985.

Figure 2
Prices received, crops and livestock, 1970-87

Index (1977=100)

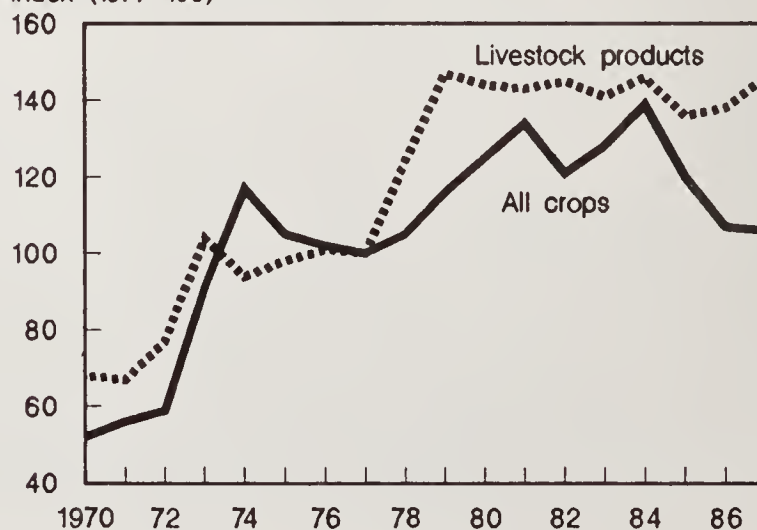


Table 3--Index of prices received and paid by farmers, 1983-87

Item	1983	1984	1985	1986	1987	Change		
						1984-85	1985-86	1986-87
	-	-	-	-	-	-	-	-
	1977=100					Percent		
Prices received:								
Crops	128	138	120	107	106	-13	-11	-1
Food grains	148	144	133	109	103	-8	-16	-6
Feed grains and hay	143	145	122	98	85	-16	-20	-13
Oil crops	102	109	84	77	79	-23	-8	3
Cotton	104	108	93	91	98	-14	-2	8
Tobacco	155	153	153	138	129	0	-10	-7
All fruit	128	202	180	170	182	-11	-6	7
Vegetables	130	133	129	130	144	-3	1	11
Livestock	141	146	136	138	146	-7	1	6
Meat animals	147	151	142	145	163	-6	2	12
Poultry and eggs	118	135	119	128	107	-12	8	-16
Dairy products	140	139	131	129	129	-6	-2	0
All farm products	135	142	128	123	127	-10	-5	3
Prices paid:								
Production items	152	155	151	144	147	-3	-4	2
Feed	134	135	116	108	103	-14	-7	-5
Feeder livestock	160	154	154	153	179	0	-1	17
Seed	141	151	153	148	148	1	-3	0
Fuels and energy	202	201	201	162	161	0	-19	-1
Fertilizer	137	143	135	124	118	-6	-8	-5
Farm chemicals	125	128	128	127	124	0	-1	-2
Farm and motor supplies	152	147	146	144	144	-1	-1	0
Autos and trucks	170	182	193	198	208	6	3	5
Tractors and self-propelled machinery	174	181	178	174	174	-2	-2	0
Other farm machinery	171	180	183	182	185	2	-1	2
Building and fencing	138	138	135	136	137	-1	0	1
Services and cash rent	145	152	150	145	146	-1	0	1
Farm wage rates	148	151	154	160	167	2	4	4
Interest 1/	258	257	237	219	207	-8	-8	-5
Taxes 2/	129	132	133	134	136	1	1	1
Production items, taxes, interest, and wages	159	162	157	150	152	-3	-4	1
Commodities, services, interest, taxes, wages	161	165	163	159	162	-1	-2	2
Ratio of prices received to prices paid 3/	84	86	79	77	78	-9	-2	1

1/ Interest payable per acre on farm real estate debt. 2/ Taxes payable per acre on farm real estate. 3/ Index of prices received by farmers for all farm products, divided by prices paid by farmers for commodities, services, interest, taxes, and wages.

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Agricultural Statistics Board, Agricultural Prices: 1987 Summary.

Table 4--Cash receipts from farm marketings and CCC loans, 1984-87 1/

Item	1984	1985	1986	1987	Change 2/		
					1984-85	1985-86	1986-87
	- - <u>Billion dollars</u> - -				- - - - <u>Percent</u> - - - -		
Crop receipts 3/	69.5	74.2	63.6	61.9	7	-14	-3
Food grains	9.7	9.0	5.6	5.4	-7	-38	-4
Wheat	8.6	7.9	4.9	4.9	-8	-38	0
Rice	1.1	1.0	.7	.5	-9	-30	-29
Feed grains and hay	15.7	22.5	17.0	13.1	43	-24	-23
Corn	10.5	16.9	12.5	8.8	61	-26	-30
Oats	.3	.3	.2	.2	-4	-41	33
Barley	1.1	1.0	.8	.8	-4	-21	-5
Grain sorghum	1.5	2.0	1.4	1.0	35	-32	-25
All hay	2.3	2.3	2.1	2.2	1	-11	6
Oil crops	13.6	12.5	10.6	10.8	-8	-15	-2
Soybeans	12.0	11.2	9.2	9.6	-7	-17	4
Peanuts	1.2	1.0	1.1	1.0	-18	7	-5
Other oil crops	.4	.3	.3	.2	-33	6	-28
Cottonlint and seed	3.7	3.6	3.6	4.0	-4	0	13
Tobacco	2.8	2.7	1.9	1.8	-4	-30	-5
Fruits and nuts	6.7	6.8	7.3	7.9	2	7	8
Vegetables and melons	9.1	8.6	8.6	9.2	-6	1	7
Other crops	8.1	8.4	9.0	9.7	4	7	8
Livestock receipts 3/	73.0	69.8	71.5	76.2	-4	2	7
Red meats	40.8	38.6	39.1	44.7	-5	1	14
Cattle and calves	30.7	29.1	28.9	33.8	-5	0	17
Hogs	9.7	9.0	9.7	10.3	-7	8	6
Sheep and lambs	.5	.5	.5	.6	8	-4	16
Poultry and eggs	11.9	10.9	12.4	11.2	-9	13	-10
Broilers	6.0	5.7	6.8	6.2	-6	19	-9
Turkeys	1.7	1.8	2.0	1.7	10	7	-13
Eggs	4.1	3.3	3.5	3.2	-20	8	-9
Farm chickens	.2	.2	.1	.1	-11	-16	-11
Dairy products	17.9	18.1	17.8	17.8	1	-2	0
Other livestock 4/	.7	.8	.7	.8	3	-5	16
Total receipts 3/	142.4	144.0	135.1	138.1	1	-6	2

1/ Receipts from Commodity Credit Corporation (CCC) loans represent value of commodities placed under loan minus value of redemptions. 2/ Changes computed from data before rounding. 3/ Totals may not add due to rounding. 4/ Includes horses and mules, and aquaculture.

Corn accounted for 14 percent of 1987 crop receipts, soybeans 16 percent, and wheat 8 percent. Fruit and vegetable marketings, which were 28 percent of crop receipts, rose 7-8 percent.

Government Payments

While the past few years have been marked by falling crop prices and sluggish exports, direct Federal payments have buoyed sector earnings. Some provisions of the Food Security Act of 1985 were intended to freeze target prices in 1986-87 and allow support prices (loan rates) to drop in an effort to maintain income protection while stimulating export and domestic sales. Because of relatively weak prices and substantial reductions in acres planted of program commodities, gross cash receipts from crop marketings declined almost \$2 billion in 1987.

Participation rates in voluntary commodity programs remained high in 1987. Enrollment by corn producers increased from 85 percent to 88 percent of the base program acres. Wheat farmers enrolled 87 percent of their base acreage, up from 85 percent for the 1986 crop. Corn and wheat enrollment increased even though required set-aside acres climbed to 20 percent and 27.5 percent of base acres, respectively. Enrollment of cotton acres remained at 92 percent, while rice farmers, already very strong participants in farm programs, increased enrollment to 97 percent of base acres, up from 92 percent in 1986.

Total direct Federal payments in support of the farm sector rose about 42 percent during calendar year 1987, pushing payments to \$16.7 billion (table 5). Cash deficiency payments for feed grains rose 4 percent after rising 27 percent in 1986. Cash diversion payments increased \$354 million. The value of Payment-in-Kind (PIK) certificates issued for deficiency and diversion payments more than doubled in 1987.

Total budget outlays to agriculture, including recoverable and nonrecoverable payments, fell \$4 billion because net CCC loan transactions declined more than \$8 billion from 1986. Recoverable payments

usually take the form of nonrecourse loans, with commodities as collateral. The loans can be repaid with cash (or, recently, PIK certificates), or by forfeiting the commodities.

In 1986, direct Government payments of \$11.8 billion were equal to 23 percent of net cash income (\$51.4 billion) (fig. 3). Direct payments (\$16.7 billion) became an even more important component of net cash income in 1987, rising to 29 percent.

The 1985 farm act contained a long-term land retirement option, the Conservation Reserve Program (CRP), which idles highly erodible land by offering 10-year contracts and annual rental payments plus one-time cost-sharing to help establish permanent cover.

Acreage in the CRP increased from about 2 million acres at the end of calendar year 1986, to over 15 million acres by the end of 1987. Annual rental payments rose from an average of \$43 per acre to \$49 per acre in 1987. Rental payments accounted for almost \$800 million, and cost-sharing made up the remaining portion of CRP payments.

Production Expenses

Farm production expenses include inputs of farm and manufactured origin, other operating expenses, and overhead costs.

Figure 3
Net cash income and Government payments, 1980-87

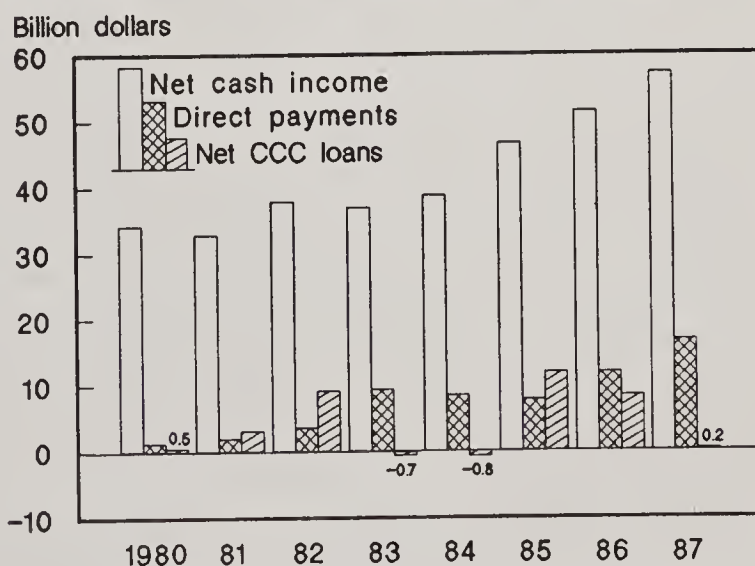


Table 5--Selected recoverable and nonrecoverable Government outlays to the farm sector, calendar years, 1982-87 1/

Item	1982	1983	1984	1985	1986	1987
<u>Million dollars</u>						
Nonrecoverable (direct Government payments)	3,492	9,295	8,430	7,667	11,817	16,747
Deficiency payments (cash)	2,001	1,927	1,919	5,631	6,473	5,697
Food grains	789	878	1,373	1,865	1,997	903
Feed grains	529	461	296	2,828	3,593	3,734
Upland cotton	683	588	250	938	883	1,059
Diversion payments (cash) <u>2/</u>	139	1,148	1,244	1,259	23	377
Food grains	0	263	613	662	0	0
Feed grains	137	883	71	1	19	377
Upland cotton	2	2	24	168	3	0
Disaster payments	182	75	1	0	0	0
Reserve storage payments	908	555	421	380	633	807
Food grains	274	266	202	168	175	142
Feed grains	634	241	131	212	458	665
Conservation Reserve Program	0	0	0	0	83	1,361
Value of PIK certificates <u>3/</u>	--	5,242	4,459	91	3,631	7,446
Dairy herd buyout	--	--	--	--	621	506
Other programs <u>4/</u>	263	348	386	306	353	553
Recoverable payments:						
Net CCC loan values <u>5/</u>	9,108	-749	-816	11,814	8,310	166
Food grains	2,416	989	267	2,642	924	-638
Feed grains	4,555	-118	-1,107	6,045	6,686	1,403
Soybeans	1,060	-1,332	492	1,902	617	22
All cotton	1,076	-289	-468	1,224	83	-621
CCC dairy purchase cost	2,089	2,107	1,560	1,875	1,812	1,041
Total Government outlays <u>6/</u>	14,689	10,653	9,174	21,356	21,938	17,954

-- = Under \$500,000.

1/ These are not official CCC budget numbers. 2/ Includes dairy diversion payments. 3/ Value of certificates issued as deficiency and diversion payments, not for any other programs. 4/ Wool price supports and various conservation programs. 5/ Negatives denote net withdrawals. 6/ Excludes operating costs and export programs.

Inputs of farm origin include feed, seed, livestock, and poultry. Manufactured inputs consist of fertilizer and lime, agricultural chemicals, fuels and oil, and electricity. Other operating expenses include costs incurred for capital repairs and maintenance; marketing, storage, and transportation; contract and hired labor; machine hire and customwork; and several

miscellaneous expenses. Interest payments on loans, capital consumption, property taxes, and net rent to non-operator landlords are overhead costs.

Total production expenses in 1987 were \$123.5 billion, up 1 percent from 1986 (table 6). Expenses declined sharply in the previous 2 years, with the change

Table 6--Farm production expenses, 1983-87

Item	1983	1984	1985	1986	1987	Change		Billion dollars
						1985-86	1986-87	
	- - - -	<u>Billion dollars</u>				- - - -	<u>Percent</u>	<u>1/</u>
Total expenses	140.4	142.7	134.0	122.3	123.5	-9	1	1.2
Farm-origin inputs	33.5	32.8	30.3	28.9	31.1	-5	8	2.2
Feed purchased	21.7	19.9	18.0	16.2	16.1	-10	-1	-.1
Livestock and poultry purchased	8.8	9.5	9.0	9.7	12.0	9	23	2.3
Seed purchased	3.0	3.4	3.4	3.0	3.0	-11	1	*
Manufactured inputs	20.9	21.5	21.0	17.0	16.8	-19	-1	-.2
Fertilizer and lime	7.1	7.4	7.3	5.8	5.4	-20	-7	-.4
Fuels and oil	7.5	7.1	6.6	4.8	4.4	-27	-7	-.3
Electricity	2.1	2.2	2.1	1.9	2.4	-10	23	.5
Pesticides	4.2	4.8	5.0	4.5	4.6	-10	2	.1
Other operating expenses	31.1	31.4	30.7	29.8	31.4	-3	5	1.6
Repair and maintenance	6.5	6.4	6.4	6.4	6.5	1	2	.1
Labor expenses	9.7	9.7	9.8	9.9	10.7	1	9	.9
Machine hire and customwork	1.9	2.2	2.2	1.8	2.0	-17	8	.1
Marketing, storage, and transportation	3.9	4.0	4.1	3.7	3.8	-12	5	.2
Miscellaneous	9.1	9.1	8.3	8.0	8.3	-3	4	.3
Overhead expenses	54.8	56.9	51.9	46.7	44.2	-10	-5	-2.5
Total interest	21.4	21.1	18.7	16.9	15.5	-9	-8	-1.4
Short-term interest	10.6	10.4	8.8	7.8	7.3	-12	-6	-.5
Real estate interest	10.8	10.7	9.9	9.1	8.2	-8	-10	-.9
Net rent to nonoperator landlords	5.1	8.6	8.2	6.7	7.0	-18	4	.3
Property taxes	4.5	4.1	4.2	4.1	4.3	-3	5	.2
Capital consumption <u>2/</u>	23.9	23.1	20.8	18.9	17.3	-9	-8	-1.6

* - Less than \$50 million.

1/ Percentage changes computed from unrounded numbers. 2/ Consists of depreciation and accidental damage, including operator dwellings.

between 1985 and 1986 being the largest single-year percentage drop since 1932. In 1987, expenses were \$10.4 billion (8 percent) below 1985 and \$19.2 billion (13 percent) below 1984. Cash expenses rose 3 percent, and operating expenses rose 5 percent, in 1987. Overhead expenses, mainly interest and capital consumption, continued to decline. In 1986, the percentage declines in operating expenses, cash expenses, and total expenses had been nearly equal.

The expense category that registered the largest absolute increase, \$2.3 billion, was livestock and poultry purchased. The \$900-million increase in labor expense was the only other large absolute increase. The largest percentage increases were in livestock and poultry purchased and electricity, which both rose 23 percent. The largest relative and absolute declines in overhead expenses were in capital consumption and interest, both down 8 percent. Declines of 7 percent for fertilizer, lime, and fuels and oil were the most significant drops among operating expenses. Decreases in these operating expenses matched the drop in acres planted and acres harvested, also off 7 percent as farmers' participation in Government acreage-reduction programs increased. Since most other operating expenses increased, however, acreage reduction did not appear to affect production expenses as much in 1987 as it had in 1986.

The \$2.3-billion jump in livestock and poultry purchases was equal to 84 percent of the total increase in cash expenses. The increased expense for purchased livestock and poultry, to its second highest level ever, was primarily due to a 17-percent rise in the prices paid for livestock and poultry. Approximately 85 percent of the growth in the prices paid index came from an 18-percent jump in the prices paid for cattle and dairy cows. Purchased quantities of livestock and poultry, except sheep, also increased. Expenditures for other livestock, a component of miscellaneous expenses, rose 72 percent.

Feed purchases dropped slightly during 1987 and remained 19 percent below 1984,

after declines of 9 percent and 10 percent the previous 2 years. The use of PIK certificates to acquire feed grains helped spur the reductions. USDA treats PIK redemptions as reductions in net CCC loans and, hence, crop cash receipts. While data are not available about the amount of grain obtained with certificates and used for feed, certificates worth about \$9.4 billion were redeemed for feed grains in 1987.

The index of feed prices declined 5 percent during the year, but increases in quantities of feed consumed offset this decline. Grain-consuming animal units increased 2 percent. Farmers also raised red-meat animals to heavier weights and increased dairy cow rations to boost the amount of milk each cow produced to compensate for a decline in numbers of dairy cows.

Seed purchases rose less than 1 percent. Less planted acreage reduced demand for and prices of feed-crop and small-grain seed, which was offset by the increased demand for and prices of forage seeds, particularly grass seeds. Farmers purchased larger amounts of forage seeds to cover the 13 million acres taken out of crop production in 1987 under the CRP.

Fertilizer expenditures fell because of a 2-percent drop in use and a 5-percent decline in average prices. Acreage reductions accounted for most of the drop in fuel expenses, as average prices paid for fuel and oil increased slightly.

The 2-percent rise in pesticide expenditures was unusual because of the declines in both the planted acreage of crops that account for most pesticide use and the average prices of pesticides in 1987. More custom applications and increased application rates may account for part of the change.

Farmers replenished pesticide inventories during 1987 that were depleted in 1986. Pesticide expenditures had increased 5 percent in 1985 while estimated pesticide use was unchanged. In 1986, pesticide expenditures decreased 10 percent while estimated use declined 6 percent.

Among other operating expenses, repair and maintenance rose 2 percent, after a 1-percent increase between 1985 and 1986. These increases mirror the advancing age of capital items. New equipment buying has declined during this decade. Labor expenses rose 9 percent because of 4-percent increases in both wage rates and the number of hired workers.

Most of the increase in machine hire and customwork expenses reflected a 10-percent rise in custom crop services, which were 77 percent of the total expense. The number of farms reporting such expenses increased 6 percent. Implicit rates for customwork (derived from FCRS data by dividing customwork expense by customwork acreage) increased 10-15 percent. The largest hikes were rates for harvesting, which accounted for 72 percent of the customwork expense. Higher crop yields in 1987 may have been the principal reason for the increase in customwork expenses. Farmers are more likely to hire customwork when yields are good and some customwork rates are based on amounts harvested per acre.

Capital consumption, the sum of accidental damage to and depreciation of farm equipment and buildings, is based on the value of the capital stock. Capital consumption estimates usually exceed economic depreciation because an asset may have useful life beyond that assumed in the calculation procedure.

The 8-percent decrease in capital consumption between 1986 and 1987 was the result of the downward trend in capital expenditures that lowered the value of capital stock during 1979-86. The 1987 falloff was less than that between 1985 and 1986, however, because farmers increased purchases of buildings and equipment during 1987.

Interest expense declined 8 percent as farm real estate debt outstanding dropped about 9 percent. There was almost no movement in average interest rates. The 5-percent rise in property taxes reflected a 3-percent increase in agricultural land values in 1987 and a 2-percent increase in tax rates.

Net rent to nonoperator landlords grew more than 4 percent. Estimates of net rent received by nonoperator landlords equal the sum of gross cash rent, gross share rent, and Government payments received by landlords minus expenses paid by landlords. The major factor in the 1987 increase in net rent was a \$530-million (30 percent) rise in Government payments, which, unlike 1986, was not offset by larger declines in combined share and cash rents. In 1986, Government payments received by landlords increased \$647 million, but combined cash and share rents declined \$2.9 billion. In 1987, cash and share rents declined \$154 million.

Acres rented for cash increased by 1 percent. Despite rises in land values and the total value (including Government payments) of crops produced in 1987, cash rental rates fell 7 percent. Because cash rental rates are established before the growing season begins, 1987 rates were still being influenced by falling land and crop values. A \$750-million drop in the landlord share of feed grains in 1987 was almost entirely offset by rises in cash receipts or landlord percentage shares for other crops. In 1986, a similar decline in feed grains share rent was reinforced by drops in other share crops.

Estimating production expenses is complicated by farmers' abilities to modify or defer production costs by purchasing inputs in one year for use in another year and to substitute inputs and services produced on their farms for purchased inputs and services. Feed, seed, livestock, and poultry can be grown rather than purchased. Repairs can be deferred or performed by the operator rather than by a mechanic. Family labor can be substituted for hired labor. When unpaid inputs are substituted for purchased inputs, total production expenses become smaller and net income larger.

Capital Flows and Formation

Gross capital expenditures for land improvements, service buildings, vehicles, machinery, and equipment in 1987 rose 16

percent from 1986, ending a string of annual declines that began in 1979 (table 7). Nominal capital expenditures in 1987 were 49 percent of the all-time high level in 1979. In 1987, real (deflated) expenditures were 33 percent of those in 1979.

Expenditures increased in all the major categories of capital assets except

service buildings. The largest percentage increases occurred for tractors, equipment, and machinery. Several factors could have contributed to the increased capital expenditures. The most important factor was probably higher net cash income in 1987, which would have allowed farmers to make purchases with available cash rather than seeking new loans.

Table 7--Farm sector capital flows (excluding operator dwellings), 1983-87

Item	1983	1984	1985	1986	1987	Change		Million dollars
						1985-86	1986-87	
	- - - -	<u>Billion dollars</u>			- - - -	<u>Percent</u>	<u>1/</u>	
Gross capital expenditures	12.7	12.5	9.6	8.5	9.8	-12	16	1,357
Service buildings	2.1	2.1	1.3	1.5	1.5	11	0	-5
Land improvements	1.2	1.2	.9	.7	.7	-28	9	61
Tractors	2.6	2.5	1.9	1.5	1.8	-22	22	334
Trucks <u>2/</u>	1.7	1.7	1.5	1.5	1.6	-5	8	122
Automobiles <u>2/</u>	.4	.3	.2	.3	.3	12	8	21
Machinery and equipment	4.7	4.7	3.7	3.1	3.9	-15	27	824
Value of inventory change	-10.9	6.3	-2.4	-2.8	-.6	-20	78	2,196
Crops	-10.5	8.0	-.4	-1.3	.5	-184	141	1,765
Livestock	-.4	-1.7	-1.9	-1.6	-1.1	18	28	431
Gross savings <u>3/</u>	1.9	18.8	7.3	5.6	9.2	-22	63	3,553
Capital consumption <u>4/</u>	19.9	19.2	17.4	15.8	14.4	-9	-9	-1,390
Depreciation	19.5	18.8	17.0	15.4	14.1	-9	-9	-1,384
Service structures	3.4	3.2	2.7	2.4	2.2	-11	-7	-176
Tractors	4.0	3.6	3.0	2.8	2.5	-5	-13	-381
Trucks <u>2/</u>	2.4	2.4	2.3	2.0	1.9	-15	-5	-90
Automobiles <u>2/</u>	.9	.9	.7	.6	.4	-20	-37	-213
Machinery and equipment	9.0	8.8	8.3	7.6	7.1	-8	-7	-524
Accidental damage	.4	.4	.4	.4	.4	-3	-2	-6
Net capital formation: <u>5/</u>								
Nominal dollars	-18.0	-.4	-10.2	-10.2	-5.2	0	49	4,943
Real dollars <u>6/</u>	-19.8	-.5	-10.4	-10.2	-5.1	3	50	5,112

1/ Percentage changes computed from unrounded numbers. 2/ Share used in farm business only. 3/ Gross capital expenditures and inventory change. 4/ Depreciation and accidental damage. 5/ Gross savings less capital consumption allowances. USDA currently does not calculate depreciation for land improvements. Without such an account, total net capital formation is overstated. 6/ GNP implicit deflator, 1986=100.

Service building expenditures fell less than 0.5 percent in 1987. Construction of buildings increased for cattle and hog production, dairy production, equipment storage, farm shops, and multipurpose buildings. An increase in expenditures for workers' dwellings coincided with a 4-percent rise in their number. Expenditures declined for grain storage structures, other crop buildings, and for poultry production structures. The decline of expenditures for grain storage and poultry production was not surprising given the unusually high expenditures in 1986. Poultry production remained the second largest building expenditure category.

Most of the tractors, machinery, and equipment purchased were previously owned. Equipment purchased during the late 1970's and early 1980's still has useful life, and a large pool of used implements is still available. More than 80 percent of the tractors purchased during 1986 and 1987 had been previously owned. Used-tractor spending constituted over 60 percent of total tractor expenditures. Forty percent of 1979 tractor expenditures were for used units.

Sales of new machinery and equipment reported by the farm machinery industry slipped 1 percent lower in 1987 than in 1986, an improvement over declines of 15 percent, 20 percent, and 6 percent in the 3 previous years.

Expenditures for constructing buildings exceeded those for remodeling, the used equivalent among buildings, but new construction was 2 percent less than in 1986. Expenditures for remodeling buildings rose 29 percent, making up 13 percent of total building expenditures in 1987.

Net capital formation equals the sum of capital expenditures and value of change in inventories minus capital consumption (the sum of depreciation and accidental damage). Estimated net capital formation in 1987 was minus \$5.2 billion, compared with minus \$10.2 billion in 1986. The \$5.3-billion difference between capital expenditures and capital consumption for

buildings, vehicles, machinery, and equipment was 34 percent less than in 1986. The value of the change in inventory was relatively small.

Capital formation has been negative since 1981. During the financial turbulence of the mid-1980's, farmers sharply curtailed capital purchases. Thus, depreciation expenses exceeded new capital purchases, producing negative net capital formation.

For buildings, vehicles, machinery, and equipment, net capital formation was relatively constant in 1982-86, from minus \$7.9 billion to minus \$8.8 billion. In those years, net capital formation varied with the value of changes in inventories. Even the large increase in inventories in 1984 could not completely offset the difference between capital expenditures and consumption. In every other year since 1982, inventory changes have also been negative and reduced net capital formation by \$2.4-\$10.9 billion.

Net Farm Income and Net Cash Income

USDA uses several different measures of income to describe the financial profile of the farm sector. Two of the best known indicators are net farm income and net cash income. Net farm income measures the net value of agricultural production during the calendar year. Net cash income is a measure of the money received from farming (regardless of when the commodities were produced) available to repay farm and nonfarm debt, purchase capital items, and spend on family living requirements. Farmers can alter the amount of net cash income they receive during the year by adjusting inventory.

Net farm income includes all cash and noncash income and expenses paid that are associated with the farm business sector and with operator dwellings. All expenses paid during the calendar year are included in net farm income regardless of whether the purchased items were actually used. The noncash income items are home consumption of farm products, imputed rental value of all dwellings, and value of inventory adjustment. The noncash

expense items are accidental damage, depreciation, and perquisites to hired labor.

Net farm income includes income and expense items associated with operators' dwellings that are located on the farm. The imputed rental value of operators' dwellings is the only applicable income item. Examples of expenses related to operators' dwellings are the proportions of electricity, depreciation, taxes, interest, and repairs allocated to farm dwellings.

The value of inventory adjustment is calculated by multiplying the calendar-year weighted average price by the change in inventory. The change in inventory is the end-of-year farmer-held stock minus the beginning-of-year inventory. If stocks fall during the year, the change in inventory is negative. Current production not sold becomes the end-of-year stock. The sum of cash receipts, value of the inventory change, and the value of home consumption of farm products accounts for total annual value of production.

Net farm income increased 23.5 percent to \$46.3 billion in 1987 (table 8). Real net farm income (in 1982 dollars) was up 19.5 percent from 1986. Gross farm income grew by \$10 billion (6 percent). Driven by lower feed grain prices and reduced corn production, crop cash receipts (including net CCC loans) fell 2.7 percent from 1986 and were 83 percent of 1985 crop receipts.

Net cash income measures the total income that farmers receive in a given year, regardless of the level of current production or the year in which marketed output was produced. Net cash income is the difference between gross cash income received from farming and cash expenses incurred. The measurement excludes income and expenses associated with the farm operator dwelling because net cash income measures income from the farm business and not the personal expenses of the farm family. Net cash income is higher than net farm income because noncash expenses greatly exceed noncash income.

Nominal net cash income increased 11 percent from 1986 to a record \$57.1 billion during 1987, while real net cash income (in 1982 dollars) increased 7.5 percent. The gain in net cash income came from growth in direct Government payments (\$4.9 billion) and livestock receipts (\$4.7 billion). The cash direct payments in table 8 include the deficiency and diversion payment amounts shown in table 5 plus some payments for storage, conservation, and other program payments. The major portion of total direct payments (61 percent) was in the form of PIK certificates.

Net cash flow is the sum of net cash income, the change in outstanding loans, changes in farmers' currency and demand deposits, and the net rent paid to all landlords, minus gross capital expenditures. It measures cash from the farming operation available to operators and landlords in a calendar year.

Strong income pushed 1987 net cash flow up \$10.6 billion from the year before, despite large negative changes in loans, reduced rental income, and increased capital expenditures. Net real estate and nonreal estate loans (excluding CCC loans) increased \$3.6 billion, which improved cash flow compared with 1986. Net borrowing remained negative; loans retired exceeded loans received.

Financial Well-Being of Farm Operator Households Compared with All U.S. Households

USDA estimates the income of farm businesses and the off-farm income of farm operator households. The Census Bureau estimates the money income of U.S. households but not that of farm operator households. However, the Census Bureau estimates the income of people who live on farms, whether an operator or not. About 20 percent of farm operators do not live on farms. The Census Bureau also estimates the income of families that are self-employed, either as operators of unincorporated farms or as landlords receiving share rent.

Table 8--Farm income and cash-flow statement, 1982-87 1/

Item	1982	1983	1984	1985	1986	1987
<u>Billion dollars</u>						
1. Farm receipts	147.1	141.1	146.8	149.1	140.2	143.7
Crops <u>2/</u>	72.3	67.1	69.5	74.2	63.6	61.9
Livestock	70.3	69.4	73.0	69.8	71.5	76.2
Farm-related income <u>3/</u>	4.5	4.5	4.4	5.0	5.1	5.6
2. Direct Government payments	3.5	9.3	8.4	7.7	11.8	16.7
Cash payments	3.5	4.1	4.0	7.6	8.1	6.5
Value of PIK certificates	0	5.2	4.5	.1	3.7	10.2
3. Gross cash income (1+2)	150.6	150.4	155.2	156.8	152.0	160.4
4. Nonmoney income <u>4/</u>	14.3	13.5	13.4	11.8	10.6	10.0
5. Value of inventory change	-1.4	-10.9	6.3	-2.4	-2.8	-.6
6. Gross farm income (3+4+5)	163.5	153.1	174.9	166.2	159.8	169.8
7. Total expenses	140.0	140.4	142.7	134.0	122.3	123.5
8. Net farm income (6-7):						
Nominal total net	23.5	12.7	32.2	32.3	37.5	46.3
Real 1982 dollars <u>5/</u>	23.5	12.2	29.7	29.1	32.9	39.3
9. Cash expenses <u>6/</u>	112.5	113.3	116.6	110.2	100.6	103.3
10. Net cash income (3-9):						
Nominal	37.8	36.9	38.7	46.6	51.4	57.1
Real 1982 dollars <u>5/</u>	37.8	35.5	35.9	42.0	45.1	48.5
11. Changes in loans <u>7/</u>	7.1	3.3	-1.9	-15.6	-16.2	-12.6
Real estate	3.8	2.3	-1.1	-6.0	-9.2	-7.7
Nonreal estate <u>8/</u>	3.4	.9	-.8	-9.6	-10.7	-4.9
12. Rental income	6.3	5.3	8.9	8.8	7.8	6.8
13. Capital expenditures <u>7/</u>	13.3	12.7	12.5	9.6	8.5	9.8
14. Net cash flow (10+11+12-13)	38.1	32.7	33.1	30.2	30.8	41.4
15. Off-farm income	36.4	37.0	38.9	42.6	44.6	46.8

1/ Totals may not add due to rounding. Numbers in parentheses indicate the combination of items required to calculate a given item. 2/ Includes net CCC loans. 3/ Income from sales of forest products, customwork, machine hire, farm recreational activities, and other miscellaneous sources. 4/ Value of home consumption of farm products and imputed rental value of farm dwellings. 5/ Deflated by the GNP implicit price deflator. 6/ Excludes perquisites to hired labor, farm household expenditures, and depreciation of farm capital. 7/ Excludes farm households. 8/ Excludes CCC loans.

The USDA estimate of farm household income includes nonmoney items: the value of changes in inventory, the imputed rental value of farm dwellings, and the value of commodities produced and consumed on the farm. Until 1984, USDA's farm operator income estimates did not include wages and salaries that farm businesses pay their own households. U.S. household income estimates include only money items. We adjusted the usual definition of USDA farm operator household income to be consistent with the definition of U.S. household money income. An additional, and as yet unresolved, data problem in income comparisons concerns a small percentage of farms, particularly those large farms where business returns are shared by more than one farm operator household.

The average income of farm operator households was below the national average throughout the 1960's (table 9) but generally improved throughout the decade. During 1972-78, farm operator household income generally exceeded the U.S. average. The relative income position of farm households declined during 1979-84, but, beginning in 1986, the income of farm operator households was again above the U.S. average. Adjusted farm operator household income averaged \$38,449 in 1987 compared with the \$32,144 U.S. average.

The gap between average incomes of farm households and nonfarm households has narrowed over time partly because of the increase of off-farm income. This comparison, however, does not address the issue of income distribution. We know that farm income is much more variable than nonfarm income and that farming is a risky occupation. We also know that a higher percentage of farm operator households are below the official poverty level compared with other households.

DIVERSITY IN THE FARM SECTOR

Incomes of particular categories of farms may differ markedly from the national average. USDA classifies farms based on production of major commodities and by gross value of sales. Dependence on Federal farm program payments and

off-farm income varies markedly by State and among farms of different types and sizes. We derived distributions by size and type of farm using benchmark distributors from farm survey data and aggregate accounts. Producer surveys are the basis for USDA's enterprise budgets that estimate costs and returns per unit of commodity.

Income Distribution by Type of Farm

Farms are categorized according to the commodity, or group of commodities, that accounts for over half of their total sales. Thus, two aggregate farm types are livestock and crop farms. According to this classification system, a crop farm may produce and sell a significant amount of livestock (as much as 49 percent of total sales). Classification of U.S. farms by enterprise type indicated that 60 percent of them specialized in livestock in 1985-87, and the remainder specialized in crops.

Crop farms earned an estimated 47 percent of total gross cash income in 1987 (table 10). They received 52 percent of net cash income (\$30 billion), up 12 percent from 1986, and 72 percent of total direct Government payments in calendar year 1987. A significant rise in deficiency payments prevented further erosion of crop farms' net cash income. Total direct payments rose \$3.6 billion, while cash receipts fell nearly \$1 billion for all crop farms. If direct payments had remained at 1985 levels, 1987 net cash income of crop farms would have fallen more than \$6 billion.

Gross cash receipts of livestock farms climbed almost \$4 billion in 1987. The increase came from \$4.7 billion more in cash receipts for livestock coupled with \$777 million less in crop receipts. Net cash income of livestock farms increased \$2.5 billion (10 percent). Direct Government payments to livestock farms, mainly due to their crop production, rose approximately \$1.3 billion.

Within the broad classifications of crop or livestock farms, more specific farm types can be defined according to

Table 9--Comparison of the adjusted USDA total income of farm operator households and average U.S. money income, 1960-87

Year	USDA total income of farm operator households 1/		Adjusted USDA total income of farm operator households 2/		Average U.S. money income 3/	Income ratio of farm to U.S. population
	Average	Total	Total	Average		
	<u>Dollars</u>	- <u>Million dollars</u> -		- - - <u>Dollars</u> - - -		
1960	4,969	19,693	16,063	4,053	6,627	0.61
1961	5,522	21,120	17,473	4,568	4,471	.71
1962	5,950	21,968	18,097	4,902	6,670	.73
1963	6,380	22,790	18,880	5,286	6,998	.76
1964	6,401	22,129	19,668	5,689	7,336	.78
1965	7,636	25,626	21,292	6,344	7,704	.82
1966	8,548	27,842	24,502	7,523	8,395	.90
1967	8,486	26,834	22,694	7,177	7,989	.90
1968	9,049	27,788	24,107	7,850	8,760	.90
1969	10,302	30,905	27,029	9,010	9,544	.94
1970	10,845	31,983	27,933	9,472	10,001	.95
1971	11,758	34,122	28,506	9,823	10,383	.95
1972	14,238	40,722	35,259	12,328	11,286	1.09
1973	20,925	59,070	50,402	17,854	12,157	1.47
1974	19,822	55,402	50,881	18,204	13,094	1.39
1975	19,614	49,447	39,564	15,694	13,779	1.14
1976	18,765	46,856	41,107	16,463	14,922	1.10
1977	18,730	46,002	36,511	14,866	16,100	.92
1978	22,538	54,902	43,738	17,955	17,730	1.01
1979	25,207	61,254	45,677	18,797	19,554	.96
1980	20,891	50,829	44,851	18,434	21,063	.88
1981	25,751	62,678	42,379	17,411	22,787	.76
1982	24,965	59,941	49,081	20,442	24,309	.84
1983	20,968	49,695	48,862	20,617	25,401	.81
1984	30,561	71,146	51,508	22,125	27,464	.81
1985	32,920	74,894	65,407	28,750	29,066	.99
1986	37,133	82,138	75,505	34,134	30,759	.11
1987	42,754	93,032	83,664	38,449	32,144	1.20

1/ Total income equals net farm income plus off-farm income. 2/ Excludes nonmoney income and, prior to 1984, the wages and salaries farm operator households paid themselves. For 1984 and later years, the wages and salaries that farm operator households paid themselves are included in off-farm income. 3/ For 1960-66, data are for families, and for 1967 and later, data are for households. From: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, various years.

Table 10--Income distribution, by type of farm, 1985-87

Item	All crop	All livestock	Red meat	Dairy
<u>Million dollars</u>				
Crop cash receipts:				
1985	66,310	8,105	5,264	1,190
1986	57,172	6,420	4,151	953
1987	56,189	5,643	3,851	801
Livestock cash receipts:				
1985	4,610	65,167	29,381	20,176
1986	4,752	66,757	30,100	19,911
1987	4,742	71,469	35,273	20,487
Direct payments:				
1985	5,477	2,226	1,414	507
1986	8,421	3,392	2,210	734
1987	12,058	4,688	3,153	880
Cash expenses:				
1985	50,369	59,231	30,050	18,534
1986	45,191	54,863	28,131	16,889
1987	45,435	57,243	31,481	16,295
Net cash income:				
1985	27,734	19,548	8,121	3,637
1986	26,772	25,140	10,531	5,011
1987	30,010	27,657	12,413	6,203
	<u>Cash grain</u>	<u>Cotton</u>	<u>Tobacco</u>	<u>Fruit/veg/nurs</u>
<u>Million dollars</u>				
Crop cash receipts:				
1985	40,627	3,669	2,363	15,031
1986	31,419	2,921	1,698	15,072
1987	21,220	4,046	1,743	15,538
Livestock cash receipts:				
1985	4,126	48	127	166
1986	4,277	48	130	168
1987	2,994	71	226	106
Direct payments:				
1985	5,651	541	32	46
1986	8,762	693	52	58
1987	9,346	1,109	108	70
Cash expenses:				
1985	34,965	2,767	1,304	8,367
1986	30,931	2,462	1,176	7,769
1987	22,980	3,405	1,794	6,382
Net cash income:				
1985	16,636	1,580	1,246	7,154
1986	14,661	1,280	730	7,813
1987	11,698	2,081	359	9,617

commodity cash receipts. Cash grain farms had at least 50 percent of their cash receipts from corn, wheat, rice, and soybeans. The estimated number of cash grain farms declined 80 percent during 1985-87. Fewer farms were classified as cash grain farms partly because sales of cash grains were a smaller percentage of total sales in 1987 than in 1985. Total receipts of cash grain farms fell \$21 billion during 1985-87. Expenses declined \$12 billion, leaving net cash income in 1987 at 54 percent of the 1985 level.

Cotton farms earned \$748 million less in crop cash receipts in 1986 than in 1985, but 1987 receipts bounced back and surpassed 1985 by \$377 million. Government payments rose 60 percent to \$1.1 billion in 1987. Although expenses increased \$1 billion from 1986, net cash income still rose 62 percent.

Red meat farms produce cattle and calves, sheep and lambs, and hogs. Total live-stock cash receipts of red meat farms increased 17 percent to \$35.3 billion in 1987. Crop cash receipts declined 7 percent (\$300 million), but direct payments rose 43 percent (\$943 million). Although cash expenses increased more than \$3 billion, net cash income still rose almost \$2 billion for red meat farms in 1987. Cash receipts for dairy farms were up slightly in 1987, and lower expenses coupled with higher payments produced a 24-percent increase in total net cash income.

Figures 4 and 5 show average net cash incomes of crop and livestock farms. Farms that specialized in fruits, vegetables, and nursery products had net cash income per farm increase during 1985-87, while tobacco farms, typically the smallest crop farms, saw average income decline in all 3 years. Net cash income per cash grain farm was down 10 percent to \$26,800 during 1985-87, despite the drop in the estimated number of cash grain farms. The estimated number of fruit/vegetable/nursery farms also declined in 1987, but with stable cash receipts and decreased expenses, average net cash income per farm increased 48 percent from 1986.

The number of red meat farms increased in 1987 because aggregate cash receipts for cattle, hogs, and sheep grew 14 percent, while crop receipts fell. Therefore, more farms were classified as red meat producers based on their gross sales. The average net cash income of red meat farms increased 10 percent to \$14,000, much less than the increase of total net cash income (17 percent). The 60-percent rise in average net cash income per dairy farm to \$34,900 was partly due to the 22-percent fall in the estimated number of dairy farms.

Figure 4

Net cash income per crop farm, by type of farm, 1985-87

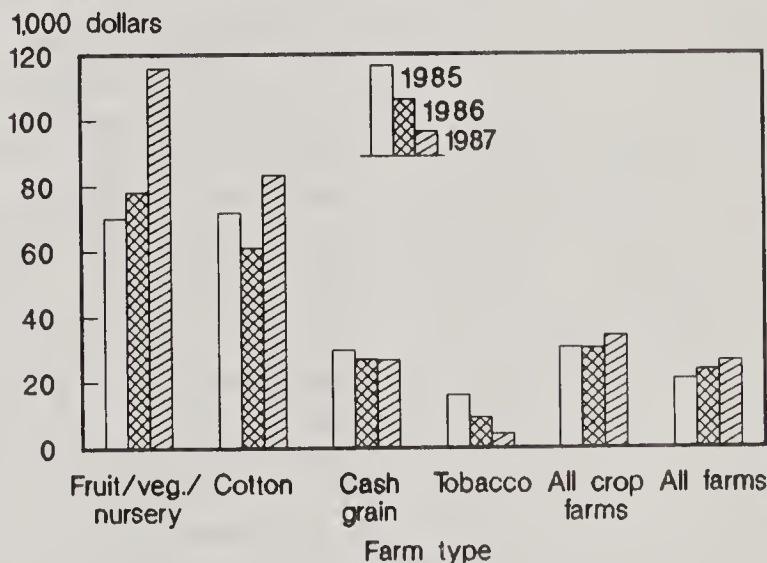
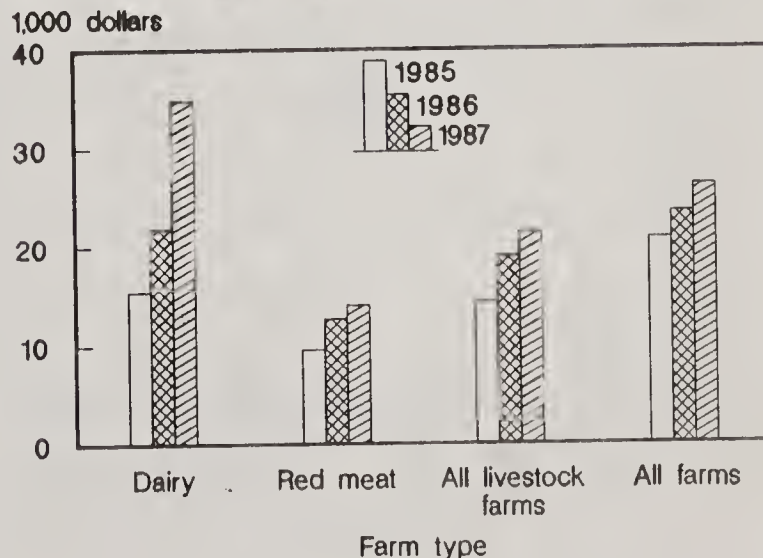


Figure 5

Net cash income per livestock farm, by type of farm, 1985-87

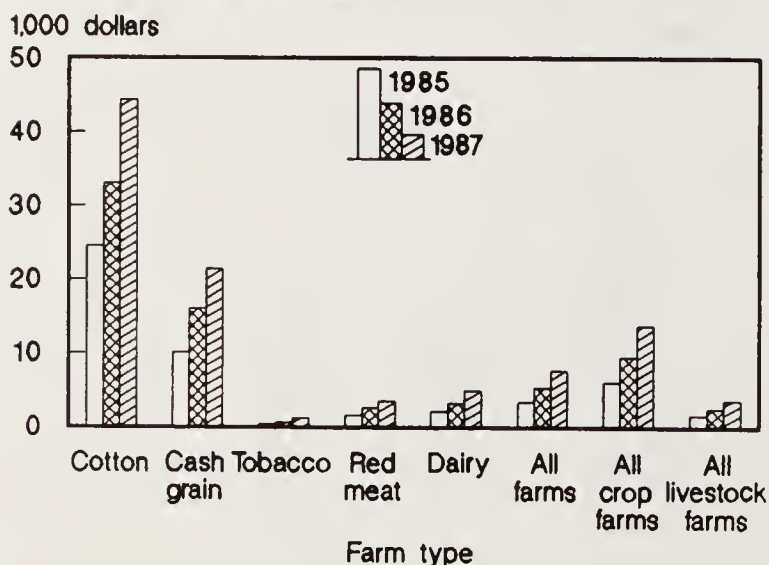


Average direct Government payments rose to \$13,700 per crop farm in 1987, a 44-percent rise (fig. 6). Cotton farms gained 34 percent to average \$44,400. Payments rose 87 percent per tobacco farm to \$1,200 and 33 percent per cash grain farm to \$21,400. Estimated numbers of cotton and tobacco farms increased in 1987, so the average direct payment grew less than the total. For livestock farms, average direct payments increased to \$3,600 per farm. Dairy farms received 54 percent more payments per farm in 1987, averaging \$4,900. Red meat farms averaged \$3,500, a 34-percent gain in direct payments.

Enterprise Costs and Returns

Production costs and returns at the commodity level determine the financial status of the individual farm enterprises rather than that of the whole farm, which is usually a mixture of several enterprises. USDA estimates national average enterprise costs for crop and livestock production. The costs-of-production estimates are per acre of land, animal, or hundredweight (cwt), depending upon the enterprise and are based on a set of national and regional budgets. The budgets are constructed with data from surveys of producers that are repeated every 4 or 5 years for each commodity. The budgets are updated between surveys from secondary sources.

Figure 6
Direct Government payments per farm, by type of farm, 1985-87



USDA procedures for estimating enterprise returns omit direct Government payments because participation in the various programs is voluntary, and each program contains special provisions for compliance. Definitions of costs and returns measures are listed below.

Measures of Costs and Returns

Gross value of production. Estimated for primary and secondary outputs. Crops are valued at their harvest-month market prices; livestock are valued at average market prices at the time of sale. Direct Government payments are excluded, but effects of Government programs on market prices are not excluded.

Cash expenses. Shortrun out-of-pocket variable and fixed production costs. They are equivalent to the minimum break-even crop or livestock values needed to maintain an average acre or livestock unit in production.

Capital replacement. Value of machinery, equipment, and breeding stock used up during the year plus the cost of returning these items to the same levels of quality and quantity at which they began the period.

Value of production less cash expenses. Shortrun return to production and the potential cashflow position of producers.

Economic costs. Cash and noncash costs, calculated as if the producer fully owned all production assets. They permit comparisons of costs among various enterprises and across time without regard to tenure and equity positions of producers. Cash expenses (except interest payments), capital replacement, and imputed returns to capital, land, and unpaid labor are included.

Residual returns to management and risk. Longrun economic indicators used to assess relative returns.

Tables 11 and 12 contain estimates of the costs and returns for major livestock and crop enterprises in 1986 and 1987. Costs for most enterprises increased slightly between 1986 and 1987. For most enterprises, values of production also were higher, the result of higher crop and livestock prices. Both shortrun returns (value of production less cash expenses) and longrun returns to management and risk generally improved. Cotton returns

increased the most, by more than 170 percent, as both yield and price increased significantly. Returns to management and risk improved by more than 25 percent for soybeans, rice, and corn. Peanut and sunflower returns fell.

Crop Enterprises

Total variable cash expenses for corn production changed little in 1987. While

Table 11--Costs and returns for major U.S. crops, 1986-87 ^{1/}

Item	Corn (bu)		Sorghum (bu)		Barley (bu)	
	1986	1987	1986	1987	1986	1987
<u>Dollars/planted acre</u>						
Gross value of production (excluding direct Government payments)	164.48	200.08	91.57	96.44	72.39	81.27
Cash expenses	169.00	176.08	83.98	83.79	75.36	77.18
Variable expenses ^{2/}	121.17	119.90	58.73	57.42	50.31	48.37
Fixed expenses ^{3/}	47.83	56.18	25.25	26.37	25.05	28.81
Value of production less cash expenses	-4.52	24.00	7.59	12.65	-2.97	4.09
Capital replacement	34.82	35.36	22.58	22.66	24.41	24.29
Value of production less cash expenses and capital replacement	-39.34	-11.36	-14.99	-10.01	-27.38	-20.20
Economic costs	237.27	251.55	136.63	137.91	119.33	121.08
Cash expenses less interest	148.38	152.67	72.52	72.45	65.01	64.73
Capital replacement	34.82	35.36	22.58	22.66	24.41	24.29
Returns to operating and other nonland capital	9.54	10.86	5.64	6.41	5.44	6.15
Net land return	32.35	40.37	25.72	26.51	18.59	20.31
Unpaid labor	12.18	12.28	10.17	9.88	5.88	5.60
Residual returns to management and risk	-72.79	-51.47	-45.06	-41.47	-46.94	-39.81
<u>Dollars/bushel</u>						
Harvest-month price	1.39	1.63	1.37	1.40	1.47	1.67
<u>Bushels</u>						
Yield per planted acre	118	122	67	69	47	47

See footnotes at the end of this table.

continued--

Table 11--Costs and returns for major U.S. crops, 1986-87 1/--continued

Item	Wheat (bu)		Rice (cwt)		Cotton (lb)	
	1986	1987	1986	1987	1986	1987
<u>Dollars/planted acre</u>						
Gross value of production (excluding direct Government payments)	68.41	78.00	218.41	263.89	263.19	485.96
Cash expenses	67.67	68.44	322.63	311.27	270.15	349.32
Variable expenses <u>2/</u>	45.94	44.56	260.66	254.04	210.71	250.00
Fixed expenses <u>3/</u>	21.73	23.88	61.97	57.25	59.44	99.32
Value of production less cash expenses	.74	9.56	-104.22	-47.38	-6.96	136.64
Capital replacement	19.64	20.03	51.55	51.39	41.76	44.52
Value of production less cash expenses and capital replacement	-18.90	-10.47	-155.77	-98.77	-48.72	92.12
Economic costs	112.72	115.14	407.47	412.90	341.87	429.54
Cash expenses less interest	58.43	58.39	293.16	285.63	236.36	289.11
Capital replacement	19.64	20.03	51.55	51.39	41.76	44.52
Returns to operating and other nonland capital	5.10	5.79	14.81	16.16	10.57	12.73
Net land return	23.94	25.34	29.16	40.36	43.39	72.67
Unpaid labor	5.61	5.60	18.79	19.36	9.79	10.51
Residual returns to management and risk	-44.31	-37.14	-189.06	-149.01	-78.68	56.42
<u>Dollars/bushel, cwt, or lb</u>						
Harvest-month price	2.30	2.39	3.83	4.83	.51	.65
<u>Bushels, cwt, or lb</u>						
Yield per planted acre	29	32	57	55	457	679

See footnotes at the end of this table.

continued--

Table 11--Costs and returns for major U.S. crops, 1986-87 1/--continued

Item	<u>Soybeans (bu)</u>		<u>Sunflowers (cwt)</u>		<u>Peanuts (lb)</u>	
	1986	1987	1986	1987	1986	1987
<u>Dollars/planted acre</u>						
Gross value of production (excluding direct Government payments)	150.64	172.81	97.72	98.37	677.32	631.23
Cash expenses	88.55	95.82	69.97	73.33	416.37	402.73
Variable expenses 2/	49.29	52.10	46.81	46.76	286.84	303.35
Fixed expenses 3/	39.26	43.72	23.16	26.57	129.53	99.38
Value of production less cash expenses	62.09	76.99	27.75	25.04	260.95	228.50
Capital replacement	29.46	29.74	18.71	18.59	43.67	43.52
Value of production less cash expenses and capital replacement	32.63	47.25	9.04	6.45	217.28	184.98
Economic costs	159.20	169.19	114.15	115.46	500.55	507.67
Cash expenses less interest	70.39	76.68	58.62	60.96	335.99	76.79
Capital replacement	29.46	29.74	18.71	18.59	43.67	43.52
Returns to operating and other nonland capital	6.17	7.13	4.51	5.08	14.35	16.52
Net land return	43.64	45.78	26.66	25.49	88.47	78.50
Unpaid labor	9.53	9.86	5.65	5.34	18.07	19.09
Residual returns to management and risk	-8.56	3.62	-16.43	-17.09	176.77	123.56
<u>Dollars/bushel, cwt, or lb</u>						
Harvest-month price	4.57	5.06	7.39	6.80	.28	.27
<u>Bushels, cwt, or lb</u>						
Yield per planted acre	33	34	13	14	2,354	2,281

1/ Sum of landlord and operator expenses are full ownership costs. 1987 estimates are preliminary. 2/ Includes seed, fertilizer, lime, chemicals, custom operations, fuel and lubrication, repairs, drying, ginning, hired labor, water for irrigation, and management fees. 3/ Includes portions of taxes and insurance, general farm overhead, and interest allocated to an enterprise.

fertilizer expenses declined 6 percent, about \$2.50 per acre, fuel, lubrication, and electricity expenses increased 13 percent, about \$1.50 per acre. Fixed cash expenses, portions of general farm expenses allocated to corn production, rose 17 percent and, as a result, total cash costs for corn increased 4 percent in 1987 to \$176 per acre. Total economic costs rose 6 percent to \$252 per acre. Despite the rise in costs, corn returns improved.

The difference between value of production and cash expenses, the potential cashflow position of corn producers, improved from minus \$5 per acre in 1986 to plus \$24 per acre in 1987. Residual returns to management and risk, the longrun return, increased for the first time since 1983 as corn yield reached a record high in 1987 and the harvest-month price rose. Although 14 percent less corn was produced and farm sector corn receipts fell 30 percent, per-acre returns improved for corn producers in 1987.

Total cash production cost per acre of barley rose slightly in 1987. Variable cash expenses fell \$2 per acre, while fixed cash expenses rose \$4 per acre. Returns to management and risk improved 18 percent from minus \$47 per acre to minus \$40 as the harvest-month price of barley increased 14 percent.

Total cash production costs per acre of wheat changed little between 1986 and 1987. Expenses for fuel and lubrication, and fixed cash expenses increased while other cash expenses declined. The value of wheat production increased \$10 per acre to \$78 due to higher yields and harvest-month prices. The cash flow from wheat production reached \$10 per acre, not enough to cover capital replacement. Returns to management and risk rose 16 percent.

Cash costs of production for rice fell slightly in 1987 to \$311 per acre. Increases in expenses for fuel, lubrication, electricity, purchased water, technical services, and hired labor were offset by drops in all other cash expense items. Fertilizer expenses fell the most, \$5.17 per acre. While cash costs fell,

total economic costs of production rose \$6 to \$413 per acre in 1987. A 26-percent increase in the harvest-month market price of rice improved residual returns to management and risk by 27 percent to minus \$149 per acre.

Increases in cotton costs of production were more than offset by large gains in cotton prices and yield in 1987. Cotton-lint yield grew by 49 percent; prices climbed 27 percent; gross value of production was up 85 percent to \$486 per acre. Residual returns to management and risk improved more than 170 percent from minus \$79 per acre in 1986 to \$56 per acre in 1987. Increased yield drove up expenses for ginning, which with greater fuel expenses, increased variable cash expenses by 19 percent to \$250 per acre. Fixed cash expenses increased almost 70 percent to \$99, primarily reflecting the increased value of cotton production relative to other crops. The allocation of fixed cash expenses to each enterprise is based on per-acre production value. Total cash expenses were up 29 percent.

Costs of soybean production increased in 1987: variable cash expenses increased 6 percent to \$52 per acre; fixed cash expenses increased 11 percent to \$44 per acre; total economic costs increased 6 percent to \$169 per acre. Despite the increases in costs, the residual returns to management and risk improved from minus \$9 per acre in 1986 to plus \$4 per acre in 1987 as a result of an 11-percent increase in the price of soybeans.

Variable cash expenses for peanuts rose \$17 to \$303 per acre, while a decline in fixed cash costs brought total cash costs down in 1987. Seed costs were up 25 percent to \$82 per acre. Gross value of production decreased 7 percent to \$631 per acre, mainly due to a decline in yields. Total economic costs increased slightly to \$508 leaving \$124 as the residual returns to management and risk, a decline of 30 percent.

Livestock Enterprises

Variable cash costs rose 3 percent between 1986 and 1987 for fed cattle.

Table 12--Costs and returns for major U.S. livestock enterprises, 1986-87 1/

Item	<u>Fed cattle</u>		<u>Cow-calf</u>		<u>Sheep</u>	
	1986	1987	1986	1987	1986	1987
	<u>Dollars/cwt</u>		<u>Dollars/cow</u>		<u>Dollars/ewe</u>	
Gross value of production	58.14	65.36	265.47	312.94	67.12	73.05
Cash expenses	58.69	60.67	238.06	255.84	43.27	44.66
Variable expenses <u>2/</u>	53.71	55.17	164.75	172.47	28.43	28.59
Fixed expenses <u>3/</u>	4.98	5.50	73.31	83.37	14.84	16.07
Value of production less cash expenses	-.55	4.69	27.41	57.10	23.85	28.39
Capital replacement	2.62	2.76	74.20	75.58	7.49	7.79
Value of production less cash expenses and capital replacement	-3.17	-1.93	-46.79	-18.48	16.36	20.60
Economic costs	60.02	61.74	420.33	439.55	59.89	62.14
Cash expenses less interest	54.51	55.93	200.86	212.24	35.22	35.89
Capital replacement	2.62	2.76	74.20	75.58	7.49	7.79
Returns to operating and other nonland capital	1.36	1.48	27.41	32.67	3.26	3.95
Net land return	.10	.10	37.80	37.82	5.84	6.12
Unpaid labor	1.43	1.43	80.06	81.24	8.08	8.39
Residual returns to management and risk	-1.88	3.62	-154.86	-126.61	7.23	10.91
	<u>Feeder pigs</u>		<u>Farrow-to-finish</u>		<u>Milk</u>	
	1986	1987	1986	1987	1986	1987
	<u>Dollars/cwt</u>					
Gross value of production	86.10	92.82	50.52	51.30	13.49	13.70
Cash expenses	61.16	59.55	34.63	34.07	10.55	10.08
Variable expenses <u>2/</u>	49.50	48.14	28.36	27.83	8.24	7.84
Fixed expenses <u>3/</u>	11.66	11.41	6.27	6.24	2.31	2.24
Value of production less cash expenses	24.94	33.27	15.89	17.23	2.94	3.62
Capital replacement	13.52	13.94	6.69	6.89	1.64	1.60
Value of production less cash expenses and capital replacement	11.42	19.33	9.20	10.34	1.30	2.02
Economic costs	88.29	88.57	43.29	43.36	12.13	11.74
Cash expenses less interest	53.36	51.89	30.53	29.98	9.19	8.74
Capital replacement	13.52	13.94	6.69	6.89	1.64	1.60
Returns to operating and other nonland capital	3.53	4.19	1.41	1.66	.61	.70
Net land return	.41	.42	.08	.08	.14	.14
Unpaid labor	17.47	18.13	4.58	4.75	.55	.56
Residual returns to management and risk	-2.19	4.25	7.23	7.94	1.36	1.96

1/ 1987 estimates are preliminary. 2/ Includes feed, veterinary fees and medicine, marketing, bedding, custom feed mixing, fuels, machinery and building repairs, hired labor, and manure credit. 3/ Includes taxes and insurance, general overhead, interest paid, and hired management.

Feed expenses led this increase. Higher cattle prices increased the gross value of production, and the residual returns to management and risk improved from minus \$1.88 to \$3.62 per cwt.

Higher cattle prices drove the gross value of production for cow-calf enterprises up 18 percent to \$313 per cow. The residual returns to management and risk improved from minus \$155 to minus \$127. Although expenses for grain fell, all other variable expense items climbed, raising total variable cash expenses 5 percent to \$172 per cow. Total cash expenses rose 7 percent to \$256 per cow.

Total variable cash expenses changed little between 1986 and 1987 for sheep enterprises. Grain expenses fell, while expenses for protein supplements increased. Total fixed cash expenses rose by \$1.20 per ewe, resulting in a slight increase in total cash expenses. Gross value of production increased 9 percent to \$73 and returns to management and risk improved about 50 percent (from \$7 to \$11 per ewe).

Total cash expenses fell slightly while the gross value of feeder pig production climbed 8 percent to \$93 per cwt. There was little change in economic costs, so residual returns to management and risk improved from minus \$2 to \$4 per cwt.

Total variable cash costs increased 2 percent in 1987 for farrow-to-finish hogs. Grain expenses fell, and protein supplement expenses rose. Fixed cash expenses were virtually unchanged as were total economic costs. An increase in the value of production improved the returns to management and risk, which rose 9 percent to \$8 per cwt.

Distribution of Income by Size of Farm

Disaggregating the farm sector into size classes can lead to a better economic assessment of the farm sector's financial health and characteristics. USDA bases size classes on values of gross sales, which include the value of commodities placed under CCC loans. We did not

include the value of inventory change in the net farm income account that was disaggregated according to gross sales because there is no satisfactory method of distributing the change.

Farm income differs dramatically by size of the farm operation. For example, in 1987, farms with sales over \$500,000 were about 1 percent of all farms, accounting for 38 percent of the cash receipts from marketings and 45 percent of the sector's net farm income. In contrast, the smallest farms, those with sales less than \$5,000, constituted 39 percent of all farms, received about 1 percent of cash receipts, and had negative net farm income.

The classification system used here views farms with sales below \$40,000 as non-commercial, or small, farms. In 1987, small farms were 73 percent of all farms. There were nearly 1.6 million small farms, almost 2 percent less than a year ago. Midsize farms, those with sales between \$40,000 and \$249,999, numbered 487,000 farms in 1987, a drop of 10,000 from the previous year. Midsize farms constituted 22.4 percent of all farms in 1987. The large commercial enterprises, with sales of \$250,000 or more, made up the remaining 4.6 percent of all farms. The number of large farms increased by approximately 1,000 despite the drop in the total number of farms from 1986.

The distribution of farm size has changed somewhat since 1982 (table 13). The proportion of midsize farms declined, while proportions of large and small farms increased slightly. However, midsize farms accounted for a greater proportion of net farm income in 1987 than in 1982.

Large Farms

The gain in net farm income for the farm sector during 1987 hinged on increased sales of livestock and livestock products and direct Government payments. These increases expanded the number of large farms because roughly half of all large farms specialized in beef cattle, hogs, sheep, or cash grains.

Large farms earned \$30.3 billion, or 64.6 percent, of net farm income before inventory adjustment in 1987 (table 14). Slightly over half of the \$6.6-billion increase in net farm income accrued to large farms. However, net cash incomes of large and midsize farms increased 11 percent, while small farms gained 22 percent. Among large farms, increased cash receipts accounted for 72 percent of the \$6.5-billion gain in gross cash income, and higher Government payments contributed 18 percent.

Large farms were the only size category that had increased expenses during 1987. About half of the expense increases came from the price rise of purchased livestock. The movement of farms into the large sales class category also raised expenses for large farms.

Large farms earned a net cash income of \$33.7 billion in 1987. The ratio of net cash income to net farm income for large farms equaled 1.11 because the sum of household and noncash expenses was \$3.4 billion more than household and noncash

income. The difference between net farm income and net cash income was smallest for large farms because the value of operator dwellings was less than the total values for the more numerous midsize and small farms.

Off-farm income for large farms increased about 15 percent in 1987 to \$2 billion. Off-farm income, a cash measure of earned and unearned income received from any source other than one's own farm, was 5.5 percent of total cash income received by large farms. The percentage of total cash income derived from off-farm income was smallest for large farms. However, the net cash income of large farms is frequently shared by several operators, but off-farm income is reported only for the principal operator.

Net cash income per agricultural operation averaged \$339,333 for large farms, up about \$31,000 from the previous year. Gross cash income rose more than twice as much as cash expenses. Increases in cash receipts averaged \$43,050 per farm, and Government payments averaged \$11,609,

Table 13--Distribution of farms, income, and expenses, by sales class, 1982 and 1987

Item	Farm sales of--						All farms
	\$250,000 or more		\$40,000 to \$249,999		Less than \$40,000		
	1982	1987	1982	1987	1982	1987	
	<u>Percent</u>						
Number of farms <u>1/</u>	3.8	4.6	24.5	22.4	71.6	73.0	100.0
Cash receipts	47.6	55.4	41.6	35.2	10.8	9.4	100.0
Government payments	19.5	24.1	59.3	56.9	21.2	19.0	100.0
Gross farm income	43.0	49.1	40.4	36.5	16.6	14.4	100.0
Expenses <u>2/</u>	37.5	43.2	42.1	37.5	20.5	19.2	100.0
Net farm income	64.2	64.6	30.8	33.6	5.0	1.8	100.0
Cash expenses	42.3	47.6	41.7	37.2	16.0	15.2	100.0
Net cash income	59.0	59.0	41.1	37.4	-.1	3.6	100.0
Off-farm income	3.3	4.2	15.3	15.1	81.4	80.6	100.0

1/ From: U.S. Department of Agriculture, Agricultural Statistics Board, National Agricultural Statistics Service, Crop Production, August 1986-88. 2/ Total cash and noncash expenses including operator dwelling.

boosting gross cash income. Off-farm income averaged \$19,935 for large farms, slightly below the national average of \$21,492 per farm.

Care must be used in interpreting average per-farm statistics because a farm may have several operators who share the risk of production activities. These operators conduct farm businesses under a variety of legal arrangements, such as corporations, partnerships, multifamily farms, and

other types of multiple-interest operations. Large farms will have a higher proportion of farms with more than one operator, so the average per-farm figures should not be interpreted as averages for individual operators.

Midsize Farms

Midsize farms earned \$15.8 billion (33.6 percent) of net farm income in 1987, up 19.8 percent from 1986. Gross farm

Table 14--Net farm income and net cash income, by sales class, 1987

Item	1987			Change from 1986		
	Farm sales of--			Farm sales of--		
	More than \$250,000	\$40,000 to \$250,000	Less than \$40,000	More than \$250,000	\$40,000 to \$250,000	Less than \$40,000
<u>Million dollars</u>						
Total:						
Net farm income <u>1/</u>	30,298	15,766	821	3,378	2,605	588
Gross farm income	83,681	62,139	24,568	6,501	1,499	-264
Expenses <u>2/</u>	53,382	46,372	23,747	3,123	-1,105	-852
Net cash income	33,682	21,350	2,030	3,253	2,046	369
Gross cash income	82,911	59,739	17,748	6,521	1,672	182
Cash expenses <u>3/</u>	49,228	38,389	15,717	3,268	-374	-187
Cash receipts	76,552	48,565	12,977	4,693	-1,531	-170
Government payments	4,029	9,534	3,182	1,169	2,741	1,023
Off-farm income	1,979	7,080	37,711	272	234	1,623
Total cash income	35,661	28,429	39,742	3,525	2,280	1,992
<u>Dollars per farm</u>						
Average:						
Net farm income <u>1/</u>	305,239	32,343	516	32,445	5,899	373
Gross farm income	843,044	127,469	15,458	60,951	5,634	87
Expenses <u>2/</u>	537,804	95,126	14,941	28,506	-265	-286
Net cash income	339,333	43,796	1,278	30,978	5,011	249
Gross cash income	835,287	122,546	11,166	61,194	5,878	293
Cash expenses <u>3/</u>	495,955	78,750	9,889	30,216	867	44
Cash receipts	771,231	99,625	8,165	43,050	-1,027	27
Government payments	40,595	19,557	2,002	11,609	5,909	665
Off-farm income	19,935	14,523	23,727	2,645	768	1,389
Total cash income	359,268	58,319	25,005	33,623	5,779	1,638

1/ Net farm income is before inventory adjustment. 2/ These expenses include operator household expenses. 3/ These cash expenses exclude cash expenses for the operator dwellings.

income rose \$1.5 billion as cash receipts declined by \$1.5 billion and Government payments rose \$2.7 billion. Crop cash receipts fell more than the value of livestock marketings increased. Midsize farms received 57 percent of total direct payments and half of the 1987 increase in direct Government payments. Expenses for midsize farms fell in 1987 largely because of declines in depreciation, a noncash item.

Net cash income of midsize farms increased by \$2.0 billion to \$21.4 billion in 1987. Gross cash income increased slightly more than gross farm income because the household income component of gross farm income fell. Cash expenses declined less than total expenses due to the relatively large decline in depreciation, a noncash item.

The ratio of net cash income to net farm income for midsize farms was 1.35. The ratio increases as farm size declines because noncash expenses, primarily depreciation, and household expenses increasingly exceed noncash income, consisting of the imputed rent of all dwellings. Off-farm income increased by \$234 million in 1987 to total \$7.1 billion, accounting for 24.9 percent of the total cash income of midsize farms.

Midsize farms had an average net cash income of \$43,796 from farming in 1987, an increase of \$5,011. Direct Government payments increased \$5,909 per farm, accounting for the rise of average cash income. Average cash expenses per midsize farm increased 1.1 percent in 1987 because the number of farms declined 2 percent. Off-farm income averaged \$14,523 per farm, an increase of 5.3 percent from 1986. Midsize farms had less off-farm income per farm than either the large or small farms. Total cash income averaged \$58,319 per midsize farm in 1987.

Small Farms

Although small farms were the most numerous of all sizes, they received only 1.8 percent of total net farm income. Small farms received \$821 million in net farm income, an increase of \$588 million from 1986. The \$852-million decline in

production expenses resulted mainly from lower depreciation allowances due to the lower values of motor vehicles, equipment, and machinery on farms and declines in value of farm buildings.

Net cash income rose 22.2 percent and gross cash income rose 1 percent in 1987, a smaller gain than either midsize or large farms. Gross cash income of small farms rose as declines of cash receipts and the gross imputed rental value of dwellings were more than offset by the rise in direct Government payments. Cash expenses for small farms declined by 1.1 percent in 1987.

Small farms' off-farm incomes rose 4.5 percent in 1987 to \$37.7 billion. Total off-farm income received by small farms was nearly 3 times the amount of cash receipts from farming. Although small farms were 73 percent of all farms, they received 80.6 percent of the off-farm income.

Net cash income from farming for small farms averaged \$1,278 per farm. Both gross cash income and cash expenses per farm increased. Cash expenses per farm climbed even though total cash expenses declined, because the number of small farms decreased. Small farms averaged \$23,727 in off-farm income and total cash income of \$25,005 per farm. Total cash income per small farm was less than half of the average total cash income for midsize farms.

Off-farm Sources of Income

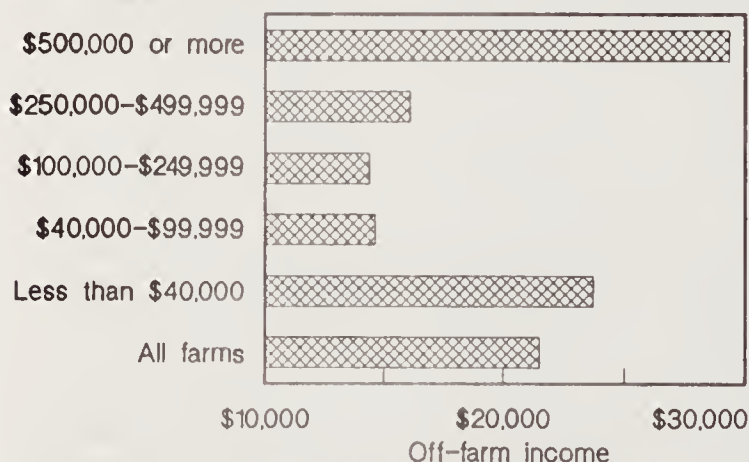
Off-farm income can affect the well-being of farm operator households, and as shown, varies considerably with the size of the farm business. The location of the farm also affects the amount of income earned from nonfarm sources. Heavy reliance on off-farm income could result from very low average farm income or from good, local, off-farm opportunities and the ability to pursue them. Most off-farm income of farm operator households is from nonfarm wage and salary jobs, although unearned income is prominent on large farms.

Off-farm income was 45 percent of the total cash income available to farm operators and their households, averaging \$21,500 per farm operator household (fig. 7). We used five size-categories to demonstrate the variation in average levels and relative importance of off-farm income. Farms with sales from \$40,000 to \$250,000 had the lowest average, about \$14,500.

Dependence on off-farm income was indicated by its percentage of total cash income. Off-farm income was most important, 95 percent of income, on the smallest farms (fig. 8). The relative importance of off-farm income diminished

Figure 7
Average off-farm income per farm, by sales class, 1987¹

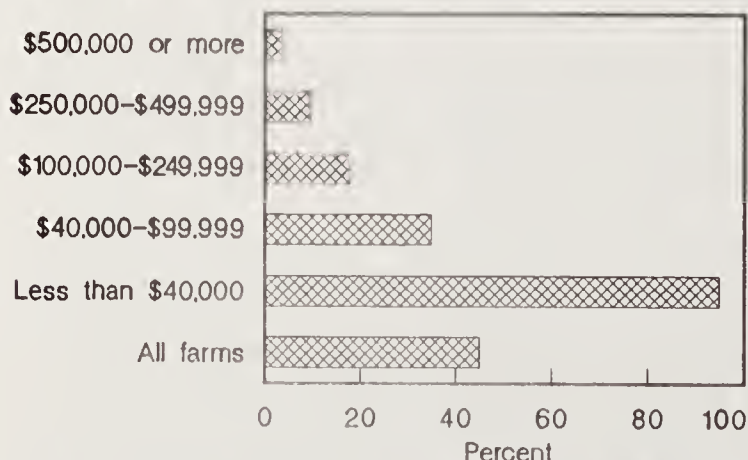
Value of agricultural sales



^{1/} Off-farm income includes nonfarm wages, wages earned on other farms, nonfarm business and professional income, interest, and dividends.

Figure 8
Off-farm income share of total cash household income, by sales class, 1987¹

Value of agricultural sales



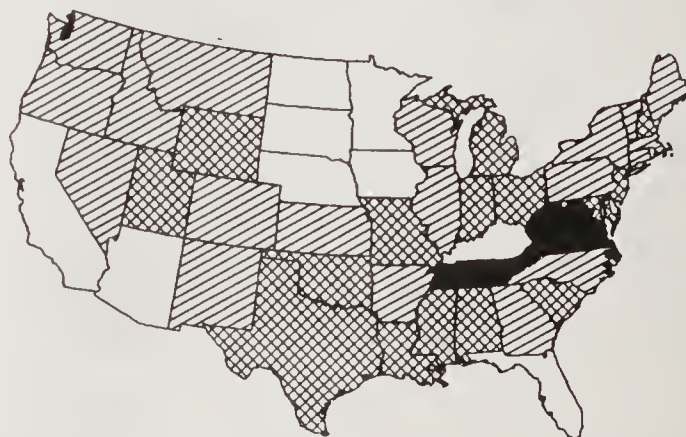
^{1/} Off-farm income includes nonfarm wages, wages earned on other farms, nonfarm business and professional income, interest, and dividends.

rapidly as size increased: 35 percent of income for farms with \$40,000 to \$99,999 in sales, 18 percent for farms with \$100,000 to \$249,999 in sales, 9 percent for farms with sales from \$250,000 to \$499,999, and 4 percent for farms with \$500,000 or more in sales.

Wide variations by State marked the total cash and off-farm income of farm households (fig. 9). Farm households in major agricultural States that were most dependent on their farming operation, rather than off-farm earnings, were in Nebraska with 22 percent of total cash income from off-farm sources. Nebraska was followed by South Dakota with 24 percent from off-farm sources, and North Dakota with 26 percent. California (28 percent), Arizona (28 percent), and Florida (32 percent) also earned most of their cash income from farm sources. The presence of very large farms in some States could mask how much some farm households were dependent on off-farm sources of income. Proportions of income were based on State-level data.

Figure 9
Off-farm income as a percentage of total 1987 income, by State¹

☐ Less than 35 percent
☒ 35-49 percent
☒ 50-64 percent
☒ More than 64 percent



^{1/} Total income equals net cash income plus off-farm income. Off-farm income is defined as the income received by farm operators and their households from nonfarm wage and salary jobs, wages earned on other farms, nonfarm business and professional income, interest, dividends, and all other cash nonfarm income.

The States with the largest proportions of off-farm income were West Virginia (85 percent), Tennessee (71 percent), and Virginia (68 percent). Net cash income from farming increased in 1987 and reduced the proportions of off-farm income to total cash income for many States.

Direct Government Payments by Sales Class

Total direct Government payments received by all sizes of farms and average payments per farm have grown substantially since 1982 (table 15). Farms that sold the most had the highest average payments per farm because payments were generally based on volume of production. The total payments and the per-farm average increased for each sales class in 1987. However, the average payment for farms with sales over \$500,000 was below the 1983 level. Sales class averages ranged from \$2,000 for farms with sales under \$40,000 to \$46,000 for farms with \$500,000 or more in sales.

Approximately 24 percent of the \$11.8 billion in direct payments in 1986, and the \$16.7 billion in 1987 went to farms with sales of \$250,000 or more. These large farms were 4.6 percent of all U.S. farms and received the lowest percentage of direct payments since 1982.

Farms with sales from \$40,000 to \$250,000 accounted for 57 percent of the total direct payments in 1987. The smallest farms received 19 percent of payments.

Direct Government payments provided an unusually large share of farms' gross income in 1987, mainly because market prices fell substantially below loan rates, in some cases causing deficiency payments to nearly equal market prices for each bushel of corn or wheat sold. Also, commodity program participation rates were record high for corn and wheat programs, with nearly 9 of 10 producers enrolled.

Table 15--Total and per-farm direct Government payments, by sales class, 1982-87

Year	Farm sales of--				
	\$500,000 or more	\$250,000 to \$499,999	\$100,000 to \$249,999	\$40,000 to \$99,999	Less than \$40,000
<u>Million dollars</u>					
1982	293	387	1,005	1,065	742
1983	1,098	1,784	3,184	2,061	1,168
1984	1,044	1,589	2,979	1,874	945
1985	805	1,521	2,447	1,850	1,082
1986	971	1,889	3,774	3,019	2,160
1987	1,325	2,705	5,263	4,271	3,182
<u>Dollars per farm</u>					
1982	9,829	6,160	4,341	2,986	431
1983	49,186	27,822	13,359	5,813	691
1984	33,409	20,554	13,000	5,308	577
1985	31,829	19,956	11,395	5,825	659
1986	35,943	26,362	18,266	10,371	1,337
1987	46,073	38,360	26,170	14,913	2,002

Most farm programs apply to specific commodities, so another source of unequal payment distribution arises from the distribution of commodity production and sales (table 16). Farms with sales of \$100,000 to \$249,999 sold the most grain and received the most payments in 1987. The ratio of total direct payments to total sales of grains, cotton, and tobacco was 0.50. Smaller farms (sales \$40,000-\$99,999) produced about the same amount of grain as larger farms (sales \$250,000-\$499,999). The ratio of direct payments to sales of program commodities was 0.70 for the smaller farms and 0.40 for the larger farms (\$250,000-\$499,999).

Cotton production was concentrated on the largest farms. The ratio of total payments to total grain, tobacco, and cotton sales from farms with sales over \$500,000 was 0.25. For farms with sales of less than \$40,000, the ratio of direct

payments to total grain, cotton, and tobacco production was 0.80. Per-farm limitations restrict payments to large farms and prevent payments from being strictly proportional to production.

State Cash Receipts

The proportion of total farm sector cash receipts earned by the top five States has remained fairly stable, with earnings at 35 percent in 1974 and 1979, 33 percent in 1983-85, and 34 percent in 1986-87. California earned 11.2 percent of total cash receipts in 1987; Texas, 6.6 percent; Iowa, 6.4 percent; Nebraska, 4.9 percent; and Illinois, 4.5 percent. Table 17 lists States that earned at least \$1 billion in cash receipts from farm marketings and net CCC loans. Cattle and calves have been the leading commodity in cash receipts for the past 28 years, and dairy products have been

Table 16--Commodity sales (including value of net CCC loans), by sales class, 1987

Commodity	Farm sales of--				
	\$500,000 or more	\$250,000 to \$499,999	\$100,000 to \$249,999	\$40,000 to \$99,999	Less than \$40,000
<u>Million dollars</u>					
Grains <u>1/</u>	3,307	5,578	8,456	5,505	3,186
Cotton and cottonseed	1,897	904	711	351	164
Tobacco	101	234	433	402	656
Vegetables and melons	5,228	913	654	344	351
Fruits, nuts, berries	4,183	1,247	1,145	708	586
Nursery and greenhouse products	4,022	1,000	729	357	294
Hay and silage	653	409	525	427	698
Other crops <u>2/</u>	2,720	1,222	974	414	185
Poultry and poultry products	5,874	2,871	2,163	466	112
Dairy products	3,625	3,262	6,203	3,918	821
Cattle and calves	17,187	4,221	4,746	3,252	4,423
Hogs and pigs	1,895	2,506	3,298	1,687	941
Sheep, lambs, wool	220	89	109	82	138
Other livestock	931	252	294	212	420
All commodities	51,844	24,708	30,439	18,126	12,977

1/ Includes feed grains, food grains, and soybeans. 2/ Peanuts, potatoes, and sugar crops are included.

Table 17--Cash receipts, by State and leading commodities, 1987 ^{1/}

State	1987 cash receipts		Percent of cash receipts from:	
	Total	Leading commodities	1st commodity	2nd commodity
	Million dollars		- - - Percent - - -	
California	15,522	Dairy products, cattle	14.0	10.0
Texas	9,086	Cattle, cotton	50.5	10.8
Iowa	8,780	Hogs, cattle	31.2	22.2
Nebraska	6,823	Cattle, corn	56.1	14.7
Illinois	6,174	Corn, soybeans	30.1	28.1
Minnesota	5,809	Dairy products, cattle	21.0	19.8
Kansas	5,722	Cattle, wheat	59.8	14.2
Florida	5,227	Greenhouse, oranges	17.8	16.5
Wisconsin	5,017	Dairy products, cattle	59.2	15.3
Indiana	3,872	Corn, soybeans	22.8	21.3
North Carolina	3,715	Tobacco, broilers	19.7	15.7
Missouri	3,691	Cattle, soybeans	26.0	21.9
Ohio	3,422	Soybeans, dairy products	21.7	17.8
Pennsylvania	3,224	Dairy products, cattle	41.6	11.8
Colorado	3,191	Cattle, wheat	62.0	6.9
Arkansas	3,143	Broilers, soybeans	35.2	11.7
Georgia	3,087	Broilers, peanuts	27.1	14.7
Washington	2,841	Dairy products, apples	16.6	16.3
Oklahoma	2,752	Cattle, wheat	58.4	10.5
South Dakota	2,723	Cattle, hogs	45.9	12.8
New York	2,527	Dairy products, greenhouse	56.2	8.2
Michigan	2,504	Dairy products, cattle	26.2	11.9
Kentucky	2,419	Horses and mules, cattle	22.3	19.3
North Dakota	2,308	Wheat, cattle	30.4	23.7
Alabama	2,148	Broilers, cattle	34.4	22.7
Idaho	2,047	Cattle, potatoes	27.8	15.7
Mississippi	1,979	Cotton, broilers	26.9	21.0
Tennessee	1,933	Cattle, dairy products	28.8	14.1
Oregon	1,861	Cattle, greenhouse	17.2	11.3
Arizona	1,781	Cattle, cotton	27.1	19.0
Virginia	1,692	Cattle, dairy products	26.7	16.0
Louisiana	1,420	Cotton, soybeans	19.9	13.9
Montana	1,347	Cattle, wheat	46.9	24.6
New Mexico	1,147	Cattle, dairy products	55.4	11.1
Maryland	1,128	Broilers, dairy products	31.5	17.4

^{1/} States listed had cash receipts of at least \$1 billion.

second for 27 of the past 28 years, so cattle and dairy continue as the top commodities in many States.

California led the Nation with \$15.5 billion in cash receipts from all commodities in 1987. Because of its diverse agriculture, California's two leading commodities, dairy products and cattle, accounted for only 24 percent of the State's total cash receipts. California ranked first in sales of all crops and fourth in total livestock earnings.

Texas had \$9.1 billion in sales, ranked second in sales of all commodities, first in all livestock, and fifth in all crops. Over half of Texas' cash receipts were from cattle and calves. Iowa ranked third in cash receipts, had the second highest sales of livestock, and showed the fourth highest crop sales. Hogs and cattle provided 53.4 percent of Iowa's cash receipts. Nebraska ranked fourth, with sales of cattle again dominating cash receipts. Illinois ranked fifth in sales of all commodities, with 58 percent of its sales from corn and soybeans.

Top earners of cash receipts for specific commodities were: Texas for cotton and cattle, Wisconsin for dairy products, Iowa for hogs, Illinois for soybeans and corn, Arkansas for broilers, Kansas for wheat, and North Carolina for tobacco and turkeys. California was the top producer of greenhouse and nursery products, eggs, hay, grapes, tomatoes, sugar beets, and lettuce.

Direct Government Payments, by State

The distribution of payments among States in 1987 was similar to 1986 (table 18). Ten States received 64 percent of the \$16.7-billion total program payments, continuing the trend of 60-70 percent of total payments received during the past few years. Most of these States are in the Northern Plains and Corn Belt regions, with Texas in the Southern Plains. These States produced most of the major program commodities--corn, wheat, and cotton.

Some shifts occurred among the top 10 States in 1987. Corn deficiency payments

kept Iowa in the top berth, with 12 percent of total U.S. direct payments. Texas, which had been the top payment recipient during 1978-85 and second in 1986, was third, replaced by Illinois in 1987. California, tenth in 1986, was displaced by Missouri. South Dakota replaced ninth-place Oklahoma.

Direct payments increased in almost all States that produced crops eligible for commodity programs in 1987. Oklahoma and Washington saw declines of 8 percent and 2 percent, respectively. Direct payments to farmers in Indiana, Missouri, Iowa, and Illinois increased 63-71 percent, while increases in North Dakota and Kansas were only 3-11 percent above 1986 levels. The top five States (Iowa, Illinois, Texas, Nebraska, and Minnesota) accounted for 44 percent of total direct payments. Corn was 15-30 percent of cash receipts in four of the top five States, and cotton accounted for 11 percent of Texas's total cash receipts in 1987.

FINANCIAL PERFORMANCE

Farm sector financial conditions improved during 1987. Asset values climbed and debt fell, allowing equity to rise for the first time since 1980. Average farmland values rose nationwide, with some regional variations. Market shares of agricultural lenders have shifted since 1980, with the Farm Credit System share reduced. The financial stress of farm operators eased in 1987, with fewer farms classified in vulnerable financial positions and more in favorable positions.

Farm Sector Balance Sheet

Asset, debt, and equity positions are important indicators of the longrun financial health of the farm sector. The sector balance sheet provides end-of-calendar-year estimates of the current market value of total assets, total debt (liabilities) outstanding, and total proprietors' equity. Equity, estimated as the difference between total assets and total debt, represents the residual that would remain if all assets were sold and all debt repaid.

Table 18--Direct Government payments and net Commodity Credit Corporation loans, 10 major States, 1983-87

State/item 1/	1983	1984	1985	1986	1987
<u>Million dollars</u>					
Iowa:					
Direct payments	925.9	742.8	691.1	1,161.2	1,987.7
Net CCC loans	-142.0	-116.5	1,610.7	1,800.0	461.4
Total	783.9	626.3	2,301.8	2,961.2	2,449.1
Illinois:					
Direct payments	560.4	543.2	491.5	882.5	1,477.6
Net CCC loans	-200.3	-92.1	1,578.4	1,230.8	267.6
Total	360.1	451.1	2,069.9	2,113.3	1,745.2
Texas:					
Direct payments	1,129.9	782.4	848.1	978.4	1,441.2
Net CCC loans	.8	-237.8	857.5	221.1	-226.1
Total	1,130.7	544.6	1,705.6	1,199.5	1,215.1
Nebraska:					
Direct payments	786.8	533.0	518.4	858.4	1,274.8
Net CCC loans	16.8	-192.2	923.3	1,065.0	198.5
Total	803.6	340.8	1,441.7	1,932.4	1,473.3
Minnesota:					
Direct payments	611.7	529.9	480.1	802.4	1,193.8
Net CCC loans	-196.8	28.9	1,025.8	1,004.1	37.4
Total	414.9	558.8	1,505.9	1,806.5	1,231.2
Kansas:					
Direct payments	606.9	573.9	482.2	870.8	966.3
Net CCC loans	202.8	-95.4	798.7	481.5	-30.3
Total	809.7	478.5	1,280.9	1,352.3	936.0
North Dakota:					
Direct payments	558.4	463.2	483.7	700.2	719.8
Net CCC loans	140.4	12.4	517.4	169.8	-135.7
Total	698.8	475.6	1,001.1	870.0	584.1
Indiana:					
Direct payments	274.2	308.8	218.3	411.3	670.2
Net CCC loans	-122.3	-19.8	607.2	422.0	71.6
Total	151.9	289.0	825.5	833.3	741.8
South Dakota:					
Direct payments	266.8	231.3	232.0	382.9	504.8
Net CCC loans	49.9	26.6	263.8	233.1	-7.0
Total	316.7	257.9	495.8	616.0	497.8
Missouri:					
Direct payments	241.2	224.6	187.7	297.5	489.8
Net CCC loans	-129.5	5.6	377.4	292.3	73.2
Total	111.7	230.2	565.1	589.8	563.0

1/ Ranking based on 1987 direct payment levels.

Total Assets

Assets grew 3 percent, reversing a downward trend that began in 1982 (table 19). The increase in farm asset values during 1987 is mainly attributable to an increase in farm real estate value, the first since 1981. Farm real estate now accounts for 70 percent of total farm asset values, down from a high of 77 percent in 1981.

In real terms, however, farm real estate value continued downward for the sixth straight year as 4-percent inflation exceeded the nominal increase in value.

Several factors that improved the longrun outlook for farm earnings contributed to the increase in nominal farm real estate values: net farm income reached a record high, average nominal and real interest rates dropped slightly, wheat and soybean stocks declined, agricultural exports

began increasing, and crop and cattle prices began improving late in the year.

Nonreal estate asset values also reversed a downward trend that began in 1980. The largest increase in nonreal estate assets accrued to livestock and poultry inventories, whose value increased by \$10 billion during 1987. The value of crop inventories also increased, but by smaller amounts than livestock and poultry inventories, primarily because of higher prices.

Financial assets increased 4 percent, by \$2.1 billion. Crop inventories, household equipment, and financial assets added \$6.3 billion to nonreal estate asset values, and offset the \$5.8-billion loss in value of machinery and motor vehicles. The decline in machinery and motor vehicle values continued a pattern that began in 1983.

Table 19--Balance sheet of the farm sector (including farm households), 1983-87

Item	1983	1984	1985	1986	1987	Change	
						1985-86	1986-87
- - - - - <u>Billion dollars</u> - - - - -							
- - <u>Percent</u> - -							
Assets	1,051.0	949.7	845.4	789.4	813.1	-6.6	3.0
Real estate	801.8	693.7	606.4	554.0	567.2	-8.6	2.4
Nonreal estate	249.2	255.9	239.0	235.4	245.9	-1.5	4.5
Livestock and poultry	49.7	49.6	46.3	47.6	57.6	2.9	21.0
Machinery and vehicles	106.2	102.7	92.4	84.4	78.6	-8.7	-6.9
Stored crops	23.9	29.6	23.5	19.1	20.5	-18.7	7.3
Household goods	24.4	26.1	27.8	30.5	33.3	9.7	9.2
Financial assets	45.0	47.9	49.0	53.8	55.9	9.8	4.3
Liabilities	206.5	204.4	188.0	166.8	153.3	-14.6	-8.1
Real estate debt	113.7	112.4	105.9	95.8	87.4	-9.5	-8.8
Nonreal estate <u>1/</u>	92.7	92.0	82.2	71.0	65.9	-13.6	-7.2
Total farm equity	844.6	745.2	657.3	622.6	659.8	-5.3	6.0
Real equity <u>2/</u>	812.9	690.6	589.5	544.7	561.5	-7.6	3.1
<u>Percent</u>							
Ratios:							
Debt/equity	24.4	27.4	28.6	26.8	23.2	-5.6	-13.4
Debt/asset	19.6	21.5	22.2	21.1	18.9	-5.0	-10.4

1/ Excludes CCC crop loans. 2/ GNP Implicit Price Index, base year 1982.

Total Debt

Total farm sector debt continued downward for the fourth consecutive year, more than 8 percent from 1986. Outstanding farm sector debt has declined 26 percent since peaking in 1983. Total nonreal estate debt has declined 29 percent during 1983-87. The drop in nonreal estate debt slowed from over 14 percent in 1986 to about 7 percent in 1987.

The stabilization of land values and the overall improvement in the agricultural economy did not result in increased loan demand because farmers used cash surpluses to replace capital items, expand their operations, and reduce outstanding debt. Uncertainty concerning the permanence of farm sector health restrained both farmers and lenders from engaging in a new round of debt-financed expansion.

The debt/asset ratio (total liabilities divided by total assets) indicates long-run farm financial strength. A low ratio implies stronger financial position, implying that a smaller proportion of assets are owed to creditors. During the 1970's, the debt/asset ratio was fairly stable at about 15 percent. Increasing debt levels, during 1980-1984, and declining asset values, through 1986, raised this measure to over 22 percent in 1985. The ratio improved to 18.9 percent in 1987 as debt levels fell and asset values stabilized.

Interest expenses on debt are closely monitored because inability to meet interest obligations may indicate potential debt repayment problems in the sector. Interest expenses have declined 29 percent from almost \$22 billion in 1982 to \$15.5 billion in 1987 (table 20).

Table 20--Farm interest expenses and selected interest rates, 1982-87 ^{1/}

Item	1982	1983	1984	1985	1986	1987
<u>Interest rate</u>						
Average on new farm loans:						
Real estate loans--						
Federal land banks	12.3	11.6	11.8	12.2	11.6	11.1
Life insurance companies	15.5	12.5	13.5	12.6	12.0	10.8
Farmers Home Administration	12.9	10.8	10.8	10.8	9.1	8.8
Nonreal estate loans--						
Rural banks	17.0	14.1	14.4	13.4	12.1	11.3
Production Credit Associations	14.6	12.0	12.5	12.4	11.2	10.0
Farmers Home Administration	13.7	10.3	10.3	10.3	8.7	8.1
Average on outstanding farm debt ^{2/}	10.8	10.4	10.4	9.9	10.0	10.0
Real estate ^{3/}	9.5	9.6	9.6	9.2	9.4	9.4
Nonreal estate	12.4	11.4	11.3	10.7	10.9	10.8
Prime rate, large banks	14.9	10.8	12.0	9.9	8.3	8.2
<u>Billion dollars</u>						
Interest expenses:						
Real estate	10.5	10.8	10.7	9.9	9.1	8.2
Nonreal estate	11.3	10.6	10.4	8.8	7.8	7.3
Total	21.8	21.4	21.1	18.7	16.9	15.5

^{1/} Includes farm household debt and CCC debt for storage and drying facilities.
^{2/} Average on outstanding farm debt was estimated as interest expense divided by debt outstanding. ^{3/} Each component was weighted by the loan volume held by each lender. CCC crop loans are excluded from nonreal estate debt. Loans for storage and drying facilities from CCC are included with real estate debt.

Interest expenses, as a percentage of total production spending, fell from almost 16 percent in 1982 to 12.5 percent in 1987.

Farmers paid \$1.4 billion less interest in 1987 than in 1986, mainly because of the continuing reduction in outstanding debt. Interest rates charged by most lenders on new loans fell in 1987, but the average interest rate on outstanding debt declined only slightly.

Proprietors' Equity

Farm equity values, in both nominal and real terms, increased for the first time since 1980 (figs. 10 and 11). Nominal farm equity had grown throughout the 1970's (12-percent compound annual rate) as growth in asset values outstripped much higher levels of debt. But, equity peaked in 1980 at \$924 billion, after which farm sector debt began accumulating more rapidly than asset values. By the time farm sector debt began declining in 1984, asset values were falling precipitously, creating a pattern of continuously falling equity. Equity declined at an average annual rate of 6 percent during 1980-86, and cumulative equity losses exceeded \$300 billion, 33 percent of the 1980 value of equity. In real terms (constant 1982 dollars), equity fell close to 50 percent over the period.

Nominal equity values bottomed out during 1987, and by year's end had increased 6 percent, reflecting both an increase in asset values and a continued decline in outstanding debt.

Farmland Values

Although the average value per acre of U.S. farm real estate grew during 1987, considerable regional variation existed (fig. 12). The largest increases were 9 percent in the Corn Belt and Northeast. Recovery in the Corn Belt was more balanced in terms of both crop and livestock returns than in other regions. But, the surprisingly large increase in farmland value for the Corn Belt may partly represent a market correction of the relatively large declines of the preceding years. The depressed energy sector appears to have continued to reduce the demand for land, including farmland, in the Southern Plains where values averaged 3 percent below a year earlier. Even though higher farm incomes and record receipts from livestock sales spanned the country, farm real estate values in the Mountain and Pacific regions failed to climb immediately.

The post-1982 decline of land values was uneven, varying by proximity to urbanization, by type of farmland, and by farm production region. Urbanization usually

Figure 10
Nominal value of farm sector equity and debt, 1970-87

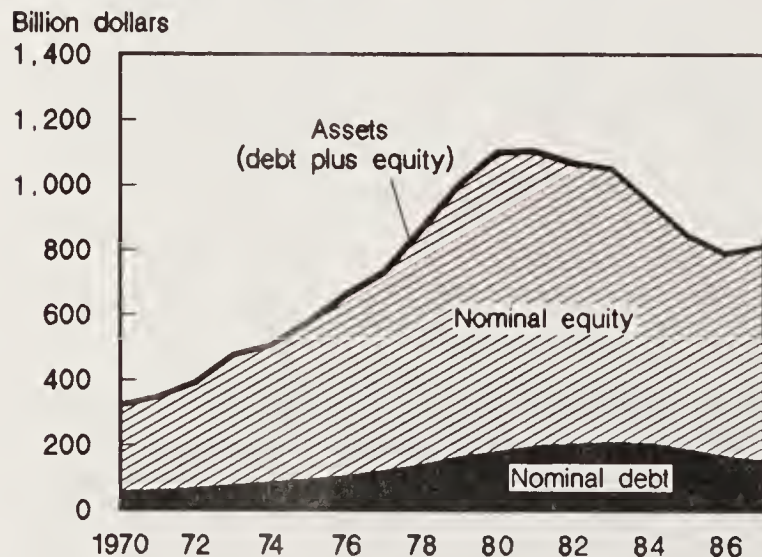
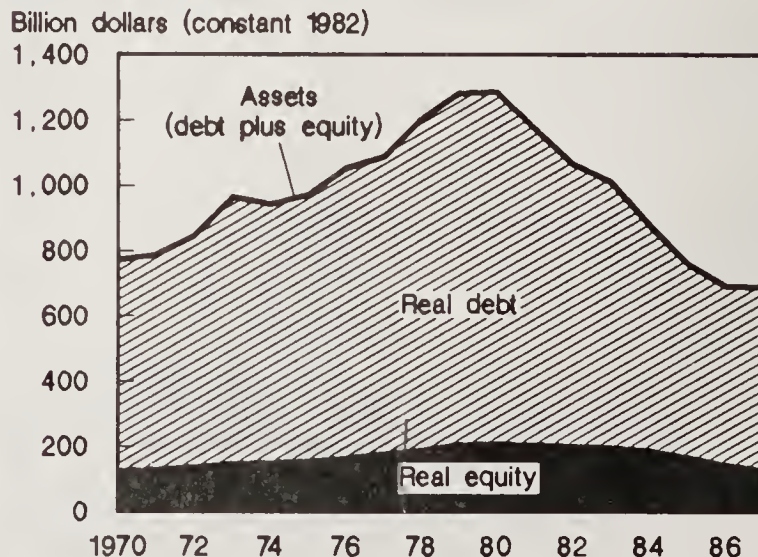


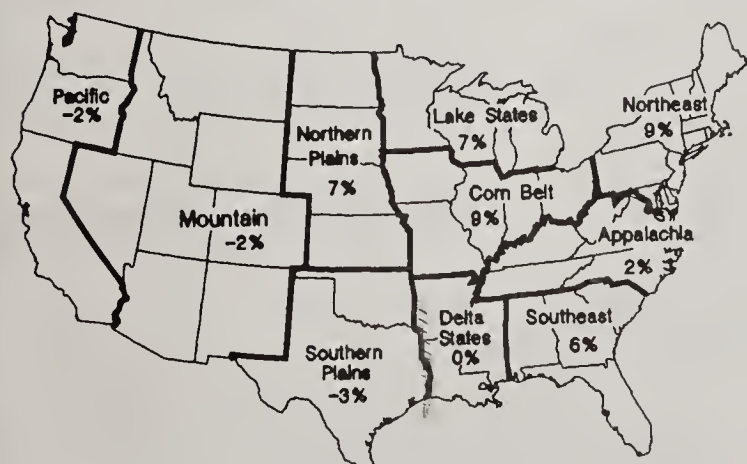
Figure 11
Real value of farm sector equity and debt, 1970-87



increases the nonagricultural demand for farmland and has softened the decline in farmland prices. Rural counties saw farmland values fall 38 percent during 1982-87, while in agricultural-urban counties the decline was 18 percent. The depth of the decline also depended upon whether the land was irrigated cropland (33 percent) or nonirrigated cropland (41 percent) or grazing land (14 percent). Irrigated cropland and grazing land have declined substantially less than non-irrigated cropland values, but they continued to fall 1-2 percent during 1987, while nonirrigated cropland values rose 7 percent.

Farmland values peaked in 1981 and 1982 in most regions. The change in value between the peak year and early 1987 varied from an 18-percent increase in the Northeast to a 54-percent decline in the Corn Belt (fig. 13). Values in the Northeast have increased every year since the end of World War II, reflecting the increasing urbanization of New England. The Corn Belt had the most severe decline of land value, followed closely by the Lake States and Northern Plains. The Delta also experienced a substantial decline. Agricultural production in these regions was heavily oriented to export commodities and suffered when the rising value of the dollar and increased foreign production reduced agricultural exports. In the Pacific and Mountain States, the declines

Figure 12
Change in farmland value, February 1987-88, by farm production region



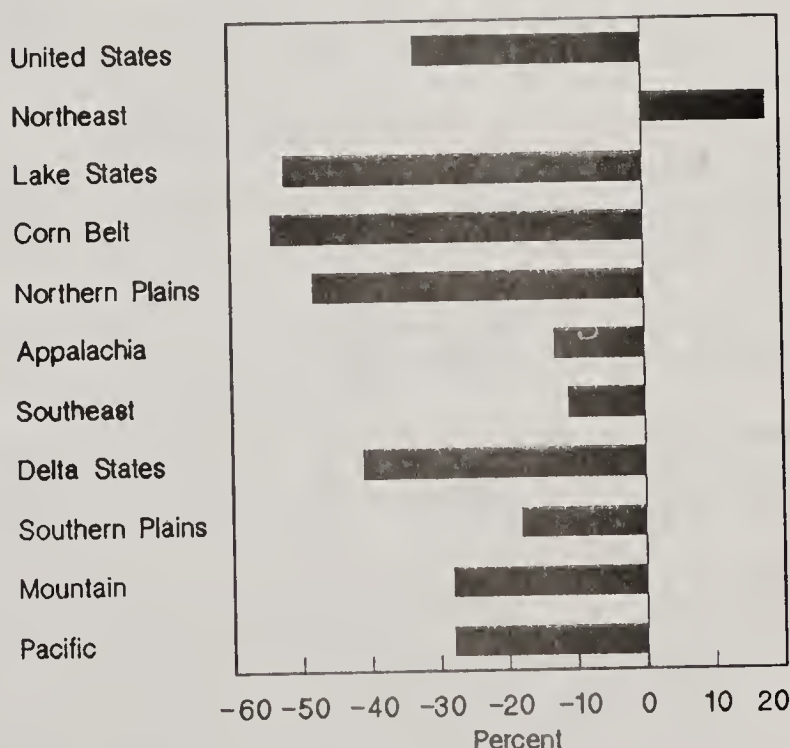
of land values were less severe, partly because of the large acreages of grazing land in these States. Decreases were the smallest in the Southern Plains, the Southeast, and Appalachia, probably reflecting continuing nonagricultural demand for farmland.

Debt Distribution among Lenders

Total farm household debt declined over \$50 billion during 1983-87. This debt reduction has not been evenly distributed among all lenders. Federal Land Banks continued to be the principal source of farm real estate credit, despite a loss of market share from 44 percent in 1984 to 37 percent in 1987 (table 21).

The second largest category of farm real estate lenders remained individuals and others. However, their market share has declined by 5 percentage points since 1982, and now accounts for less than 24 percent of real estate debt. While life insurance companies' share of farmland debt has remained fairly stable at about 12 percent, commercial banks and the FmHA have accumulated increasing shares of real estate debt owed by farmers.

Figure 13
Change in regional farmland value between peak year and 1987



Commercial bank debt secured by farm real estate has increased throughout the 1980's, primarily due to banks requiring additional security for production and machinery loans. While total farm real estate debt declined over 23 percent during 1983-87, commercial bank real estate debt increased 55 percent during the same period, including an increase of almost 14 percent in 1987. Commercial bank real estate debt jumped from 19 percent of all commercial bank debt in 1982 to 33 percent in 1987.

Outstanding CCC loans to farmers for storage and drying facility loans peaked at almost \$1.5 billion in 1980. Few new loans have been issued since, and, by the end of 1987, the loan balance had been paid down to less than \$50 million.

Real estate debt owed to individuals and others, created primarily through seller financing of real estate transfers, fell an estimated 14 percent in 1987. During 1983-87, the real estate debt of individuals and others fell more than 36 percent, as lower sales prices and growing seller hesitancy to finance land

transactions reduced outstanding debt levels. Although land values generally stabilized in 1987, owners who had weathered substantial capital losses on their farmland were reluctant to sell in a rising market.

Commercial banks' share of nonreal estate debt (not secured by real estate) increased from less than 40 percent to almost 45 percent during 1982-87. The FmHA share meantime increased from 16 percent to 24 percent, because of large reductions in the Farm Credit System's share.

The nonreal estate debt owed to the Farm Credit System (includes Production Credit Association (PCA) loans and Federal Intermediate Credit Bank loans through other financial institutions) fell almost 55 percent. The 12-percent decrease in 1987 represented an easing of the rate of reduction from a 24-percent decline in 1986. As loans for equipment replacement increased, PCA's reported rising loan volume through the first quarter of 1988, possibly signaling a return to more traditional seasonal borrowing patterns.

Table 21--Distribution of farm debt (including operator households), by selected lenders, December 31, 1985-87

Lender	<u>Real estate debt</u>			<u>Nonreal estate debt</u>		
	1985	1986	1987	1985	1986	1987
<u>Billion dollars</u>						
Federal land banks	44.7	37.7	32.3	n/a	n/a	n/a
Federal Intermediate Credit Banks	n/a	n/a	n/a	.5	.3	.2
Production Credit Associations	n/a	n/a	n/a	14.0	10.7	9.5
Farmers Home Administration	10.4	10.3	10.1	16.7	16.4	16.0
Commodity Credit Corporation <u>1/</u>	.3	.1	*	n/a	n/a	n/a
Commercial banks	11.4	12.7	14.5	35.5	31.2	29.0
Life insurance companies	11.8	10.9	9.9	n/a	n/a	n/a
Individuals and others	27.2	24.0	20.6	15.4	12.4	11.1
Total	105.9	95.8	87.4	82.2	71.0	65.9

n/a = Not applicable.

* = Less than \$50 million.

1/ Excludes commodity loans, includes loans for crop storage and drying facilities.

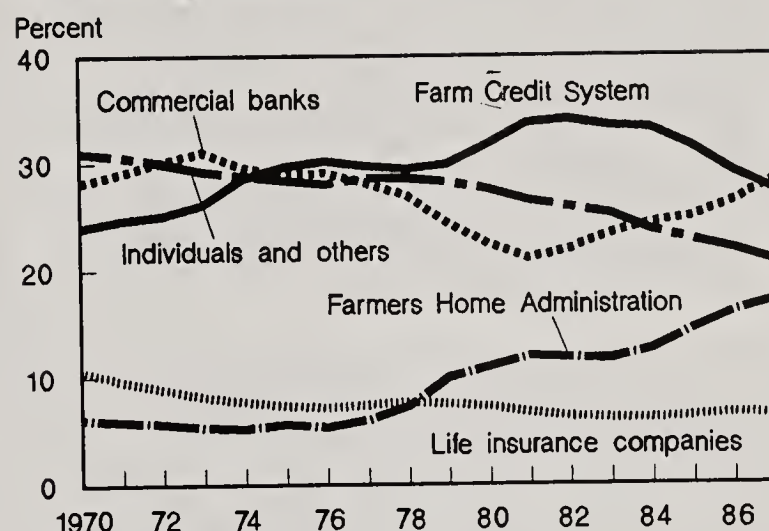
Debt not secured by real estate and owed to individuals and others dropped 10 percent in 1987, following declines of almost 20 percent in 1986 and 15 percent in 1985. Nonreal estate debt of individuals and others fell by almost 43 percent, while market share declined over 4 percentage points to less than 17 percent during 1982-87.

Commercial banks passed the Farm Credit System as principal holder of combined real estate and nonreal estate farm debt in 1987 (table 22). The Farm Credit System has experienced a loss of market share from 34 percent of all outstanding debt in 1982 to 27 percent in 1987 (fig. 14). Federal Land Bank debt outstanding fell 34 percent during 1984-87, including a 14-percent drop in 1987 alone. Over the same period, commercial banks' market share grew from 24 percent to 28 percent, despite a 13-percent decline in loans outstanding.

FmHA's share of total debt reached 17 percent in 1987, up from 12 percent in 1982, mainly due to a reluctance to initiate collection actions against delinquent borrowers. Potential aggressive loan

Figure 14

Lender market shares of farm debt outstanding, 1970-87¹



1/ Includes operator households.

restructuring and writeoffs and shifting program emphasis to guaranteed loans may significantly reduce FmHA shares of both real estate and nonreal estate debt.

Lending Policies

While debt outstanding continued to decline, the rate of debt reduction slowed from over 11 percent in 1986 to 8 percent in 1987, partly because of lender efforts

Table 22--Farm real estate and nonreal estate debt (including operator households), December 31, 1982-87

Lender	1982	1983	1984	1985	1986	1987
<u>Billion dollars</u>						
Federal land banks	47.8	48.9	49.2	44.7	37.7	32.3
Production Credit Associations	20.5	19.3	17.9	14.0	10.7	9.5
Federal Intermediate Credit Banks	.9	.9	.9	.5	.3	.2
Farmers Home Administration	23.9	24.2	25.7	27.1	26.7	26.1
Commodity Credit Corporation ^{1/}	1.1	.9	.6	.3	.1	*
Commercial banks	44.5	48.3	49.8	46.9	44.0	43.5
Life insurance companies	12.8	12.7	12.4	11.8	10.9	9.9
Individuals and others	51.5	51.3	47.9	42.6	36.4	31.7
Total ^{2/}	203.1	206.5	204.4	188.0	166.8	153.3

* - Less than \$50 million.

^{1/} Excludes commodity loans, includes loans for crop storage and drying facilities.

^{2/} Totals may not add due to rounding.

to restructure problem loans rather than to foreclose. In previous years, lenders had emphasized collateral values in evaluating exposure to loan losses, which led to rapid initiation of foreclosure. The decline in land values and limited markets for foreclosed properties prompted lenders to work out troubled loans, and to emphasize repayment capacity and the financial condition of the borrower rather than the value of loan security.

Legislation concerning relationships between borrowers and lenders simultaneously encouraged the restructuring of problem loans and provided incentives to lenders to screen loan applicants. The Agricultural Credit Act of 1987 mandates that Farm Credit System institutions consider restructuring options prior to foreclosure actions, if such options are the least-cost alternatives. Borrowers may invoke Chapter 12 bankruptcy procedures, providing lenders with an incentive to restructure problem loans, rather than risk losses through settlement.

The possibility of borrowers invoking Chapter 12 in response to lenders' debt collection actions has created pressure to tighten loan approval criteria for new borrowers and has increased interest rates and collateral requirements and reduced credit availability to marginal loan applicants.

Farm Credit System lenders began offering concessionary financing to purchasers of foreclosed properties. Farm Credit Services in St. Paul, for example, developed several acquired property sales programs to stimulate foreclosure sales. The Loan Values Guaranteed program guarantees buyer satisfaction by allowing purchasers, at the time of sale, to specify a future date at which they can reconsider their purchase. Downpayments and principal payments are placed in special escrow accounts until the reconsideration option date has passed. If the purchaser elects to rescind the sale, Farm Credit Services will return the downpayment and any principal paid.

Farm Credit Services' Multiple Choices program allows purchasers to select from

options on downpayments, interest rates, and repayment schedules.

The Agricultural Credit Act of 1987 legislates a policy of maintaining FmHA borrowers on the farm while limiting the long-term losses to FmHA. Borrowers who fail to maintain cash flow under interest rate reduction and debt deferral programs can have loans written down to current appraised value less FmHA's liquidation cost. Loans restructured in this way would create an FmHA equity interest, with the amount written down recoverable at some point in the future, at either the time of resale or some predetermined reappraisal date.

The writeoff rate of FmHA nonreal estate debt was about 2 percent in both 1986 and 1987. That rate of debt decline is expected to accelerate soon as FmHA initiates debt writeoff actions. FmHA is pursuing a policy of guaranteeing loans made by other lenders, principally commercial banks, instead of issuing loans directly to farmers. Although several life insurance companies are marketing properties acquired through foreclosure, most lenders are managing their past foreclosures, choosing to hold long-term agricultural assets in their portfolios as farmland property owned instead of farm real estate mortgages.

Massive balance sheet restructuring over the past several years has left current farm operators in financial positions that would allow them to withstand at least temporary setbacks in agricultural returns. This strengthening of the agricultural sector's financial position during 1987 brought subtle changes in the farm real estate market. Improved income and debt levels, combined with lower interest rates and adequate credit for farm real estate loans, brought more buyers into the farm real estate market and fewer sales involved financing, continuing a trend that began in the early 1980's. About 70 percent of sales involved financing compared with nearly 90 percent in the late 1970's. Cash sales were especially strong in the Corn Belt. The percentage of debt to purchase price also declined.

Operator Financial Stress

The distribution of operator debt, income, and financial stress varied by size, type of production specialty, and region in 1987. We used data from the FCRS to analyze the incidence and distribution of financial stress among operators of U.S. farms, focusing primarily on commercial farms, which we define as operations with annual gross receipts of at least \$40,000.

Income and indebtedness are important indicators of a farm's financial position, useful in pinpointing financial stress. We calculated three measures of income: net cash farm income, net cash household income, and net farm income (see "Measures of Farm Financial Performance"). These three measures offer alternative ways to assess yearly revenues and expenses of the farm household or business. The debt/asset ratio, a measure of solvency, is an indicator of the financial risk associated with the farm business.

Relying on income or solvency alone can be misleading. For example, a high debt/asset ratio is acceptable if the firm generates enough income to service debt and meet other financial obligations. Even low debt can be a problem if cash flow is insufficient to pay interest and principal payments. We use a framework for evaluating the individual farm financial position which is based on combined income and solvency position (fig. 15).

Farms or households classified in a favorable position have positive income and a low debt/asset ratio (less than 0.40). These financially healthy farm operations might consider investment or business expansion. Farms placed in the marginal income category have low debt but negative income; their income problem is more likely to be related to current business decisions or changes in the economic climate than to the financial riskiness of past decisions.

Measures of Farm Financial Performance

Net cash farm income. Measures the amount of funds generated by the farm business that can be used to repay principal, expand the business, or pay for family consumption or other obligations. Calculated as gross cash income minus cash operating expenses, including interest payments but excluding principal repayment.

Net cash household income. Measures funds available to the farm household, after cash business and family living expenses are met, for business expansion, further consumption, savings, or other obligations. Calculated as family nonfarm income plus net cash farm income minus an estimate of principal repayments and a family living allowance. Family living allowance for 1987 was estimated at \$17,400. Principal payments estimated for each operation were based on the amount of real estate and nonreal estate debt owed to each lender and were consistent with standard debt repayment schedules.

Net farm income. Provides a calendar year measure of the net value of agricultural production whether sold or stored on the farm. Calculated as adjusted gross cash income, reflecting changes in inventory values, plus nonmoney income minus total operating expenses, including both interest and depreciation of capital stock.

Debt/asset ratio. Measures both proportional owner equity in the farm and the financial risk exposure of the operation (the extent to which the farm's assets have been borrowed against). Calculated as total debt outstanding as of January 1, 1988, divided by the farmer's estimate of the current market value of owned assets of the farm business.

Figure 15

Financial position classifications

Income status	Debt/asset ratio 0.40 and under	Debt/asset ratio over 0.40
Positive: Net cash farm income Net cash household income Net farm income	Favorable	Marginal solvency
Negative: Net cash farm income Net cash household income Net farm income	Marginal income	Vulnerable

The marginal solvency category includes farms or households with debt/asset ratio above 0.40 and positive income who, while not experiencing short-term income difficulties, are susceptible to economic changes that would prevent making cash commitments. Vulnerable farms or households are in a doubly stressful situation because they have both high debt and negative income. Their income neither meets current expenses nor reduces indebtedness, and their continued viability is threatened.

The number of farms estimated from the FCRS is lower than the official USDA estimate. Thus, debt, asset, income, and other estimates from the FCRS differ from our farm sector estimates. However, the FCRS accounts for 94 percent of the official USDA number of farms with sales above \$40,000.

Debt Levels and Distribution

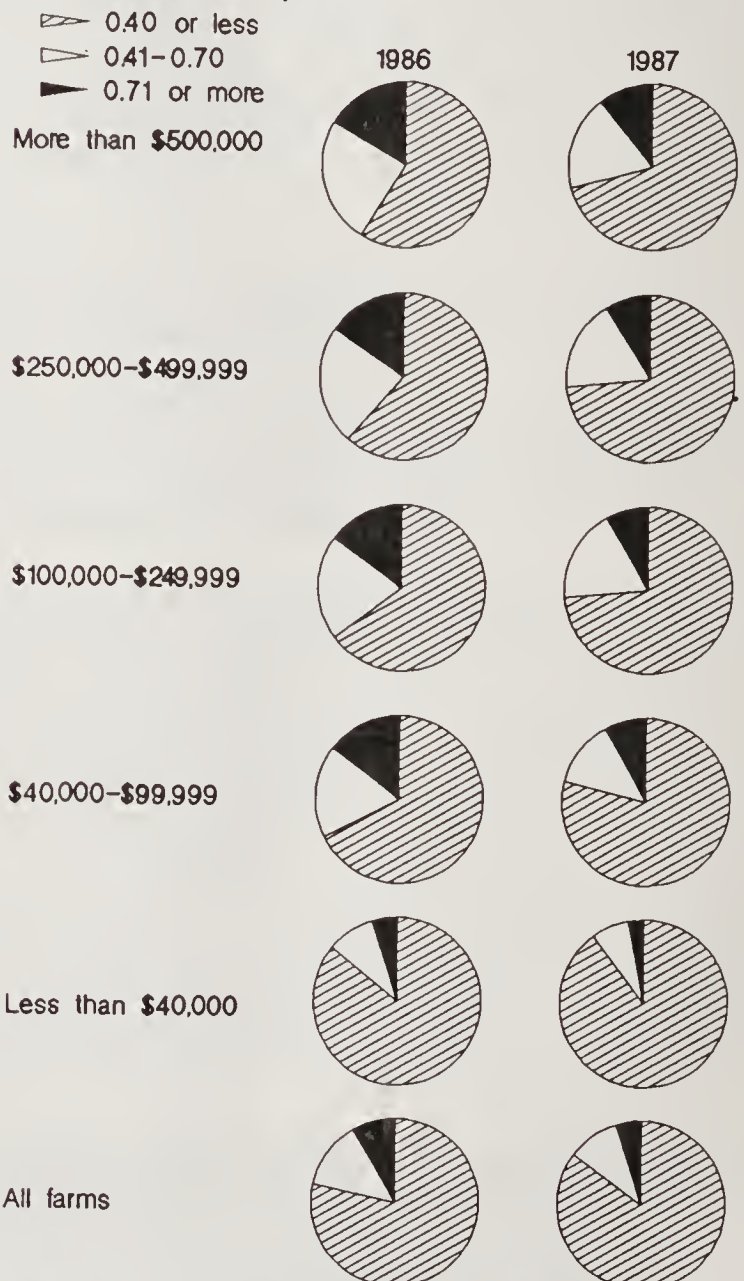
At the end of 1987, the solvency status of U.S. farm operators was much improved compared with 1986 (fig. 16). Increases in asset values, particularly farmland, coupled with debt reduction, lowered operator debt/asset ratios. The portion of farms with debt/asset ratios below 0.40 increased from 79 to 85 percent during 1987.

While all economic classes of farms improved their solvency positions,

commercial farms, which have historically higher debt/asset ratios than noncommercial farms, improved their positions the most during 1987. Corresponding to a 17-percent increase in the number of commercial farms with debt/asset ratios below 0.40 was a 43-percent drop in the number with ratios above 0.70 (table 23). The number of commercial farms with debt/asset ratios above 0.70 declined from about 82,500 to 46,800 during 1987.

Debt owed by commercial farms dropped by 14 percent during 1987. At the end of the year, commercial farms owed about three-quarters of all operator debt,

Figure 16

Distribution of farms, by economic class and debt/asset ratio, 1986-87¹

^{1/} Based on the value of sales of all agricultural products (including landlord's share) and Government payments received.

slightly less than during 1986. Twenty-five percent of commercial farm debt was owed by operators with debt/asset ratios of 0.71 or more compared with 35 percent in 1986.

Net Income Levels

The profitability of both commercial and noncommercial farms, as evidenced by net farm income, substantially improved during 1987 (table 24). Eighty-one percent of commercial farms and 77 percent of noncommercial farms had positive net farm incomes in 1987, compared with 72 and 67 percent, respectively, the year before.

Net cash farm income improved more for noncommercial farms than larger farms, in 1987, indicating better farm business liquidity. Commercial farms' net cash household income improved slightly more than net cash farm income. Commercial farm businesses continued to have better liquidity than farm households, but the reverse was true for noncommercial farms. Household income was not sufficient to service debt and meet farm and family expenses on about 518,500 noncommercial farms and 154,000 commercial farms.

Financial Stress

We classified a smaller share of all farms in vulnerable financial positions in 1987

than in 1986 and a larger portion of farms in favorable financial positions. When we used net cash farm income with the debt/asset ratio to classify farms, 65 percent of commercial farm businesses (about 355,000 farms) were in a favorable financial position, and 5 percent were financially vulnerable (table 25). Only 41 percent of the noncommercial farm businesses (459,000) were classified as favorable. In 1986, 9 percent of commercial farms had been classified as vulnerable and 55 percent in favorable financial positions.

Over 70 percent of noncommercial farm businesses were in favorable positions when we used net farm income, a long-term (accrual accounting) indicator of financial health, to classify farms (compared with 61 percent in 1986). By these criteria, 63 percent of commercial farms were classified favorably in 1987, with 27 percent more commercial farms in favorable financial positions in 1987 than in 1986.

Variations among Commercial Farms

We used net cash farm income with the debt/asset ratio to look at variations in financial stress among commercial farms. Because net cash farm income is used, the results indicate financial conditions of the farm business from a short-term (cash

Table 23--Commercial farms by debt/asset ratio, 1985-87 ^{1/}

Item and year	Debt/asset ratio				Total
	0.40 and below	0.41-0.70	0.71-1.0	Over 1.0	
<u>Thousands</u>					
Number of farms:					
1985	412.9	119.8	47.9	41.9	622.4
1986	357.0	107.8	50.1	32.4	547.3
1987	416.9	86.4	28.0	18.8	550.1
<u>Billion dollars</u>					
Amount of debt: <u>2/</u>					
1985	29.8	32.2	17.6	15.9	95.5
1986	25.0	26.9	16.7	11.2	79.7
1987	29.2	22.3	9.0	8.1	68.6

^{1/} Commercial farms had annual receipts of at least \$40,000. ^{2/} Excludes CCC loans.

Table 24--Financial position of commercial and noncommercial farms, 1986-87 1/

Income and year	Commercial farms			Noncommercial farms		
	<u>Debt/asset ratio</u>			<u>Debt/asset ratio</u>		
	0.40 and below	Above 0.40	Total	0.40 and below	Above 0.40	Total
<u>Percent 2/</u>						
Positive income:						
Net cash farm income--						
1986	55	26	81	34	4	37
1987	65	19	83	41	3	44
Net cash household income--						
1986	49	18	68	46	7	53
1987	59	13	72	48	6	54
Net farm income--						
1986	50	22	72	61	6	67
1987	63	18	81	71	6	77
Negative income:						
Net cash farm income--						
1986	10	9	19	52	10	63
1987	11	6	17	49	7	56
Net cash household income--						
1986	16	16	32	40	7	47
1987	17	11	28	42	5	46
Net farm income--						
1986	15	13	28	25	8	33
1987	13	6	19	19	4	23

1/ Commercial farms had annual receipts of at least \$40,000, and noncommercial farm had receipts under \$40,000. 2/ Totals are from percentages before rounding.

Table 25--Financial position of commercial farm businesses, by economic class, 1987

Economic class	Favorable	Marginal income	Marginal solvency	Vulnerable	Total
	<u>Percent</u>			<u>Number of farms</u>	
Commercial farms:					
\$500,000 and over	59	12	22	7	28,500
\$250,000-\$499,999	64	10	21	5	66,900
\$100,000-\$249,999	64	10	21	5	199,100
\$40,000-\$99,999	66	13	15	6	255,600
All commercial farms	65	11	19	5	550,100

See figure 15 for explanation of terms.

accounting) perspective. Using net cash household income or net farm income produces different results.

The largest operations had the least desirable financial situation, most likely to be vulnerable and least likely to be in a favorable position. All classes of commercial farms were more likely to be in the favorable and the marginal income categories in 1987 than they were in 1986 and were less likely to be in the marginal solvency and vulnerable categories. The larger the economic class, however, the smaller the portion that shifted from vulnerable to a less stressful financial status during 1987.

Tobacco farms were in the most favorable financial position in 1987 (table 26). Poultry operations also had a strong position and, although a relatively high percentage fell into the marginal solvency category, incomes were high enough to prevent a large proportion from being stressed. We found that tobacco, cotton, and poultry farms improved their financial positions the most during 1987.

Only nursery/greenhouse operations were less likely to be classified as favorable in 1987 than they were in 1986. The

portion of nursery/greenhouse operations with marginal income increased from 5 percent to 17 percent, indicating income difficulties in 1987.

The highest incidence of stress, as in 1986, occurred on other crop farms (which include diversified operations as well as farms specializing in crops other than those in the major categories), with 8 percent classified as vulnerable in 1987 compared with 14 percent a year earlier. Vegetable/fruit/nut operations followed with 7 percent in 1987. Despite improved debt/asset ratios in the farm sector, debt problems continued to overshadow income problems for all of the production specialty types, except nursery/greenhouse and other livestock.

Financial health varied less across regions in 1987 than in 1986 (table 27). The Southeast, Delta, Southern Plains, and Mountain regions, which had among the smallest shares of financially favorable farms in 1986 (44-52 percent) and the largest shares of stressed farms (9-16 percent), improved substantially during 1987. Only in the Northeast did the share of vulnerable farms rise (from 4 percent to 6 percent) due to an apparent weakening of incomes. Debt/asset ratios

Table 26--Financial position of commercial farm businesses, by production specialty, 1987

Production specialty	Favorable	Marginal income	Marginal solvency	Vulnerable	Total
	<u>Percent</u>				<u>Number of farms</u>
Cash grain	63	12	19	6	185,600
Tobacco	74	11	12	3	8,600
Cotton	68	10	16	6	16,700
Other field crops	62	11	19	8	21,600
Vegetables, fruits, nuts	60	16	17	7	23,300
Nursery, greenhouse	69	17	13	1	10,700
Beef, hogs, sheep	65	13	18	4	135,400
Poultry	72	3	22	3	15,200
Dairy	66	7	22	5	120,800
Other livestock	60	25	9	6	12,200

See figure 15 for explanation of terms.

Table 27--Financial position of commercial farm businesses, by farm production region and selected States, 1987

Region and State	Favorable	Marginal income	Marginal solvency	Vulnerable
	<u>Percent</u>			
Northeast	68	13	13	6
Delaware, Maryland, New Jersey, Virginia, West Virginia ^{1/}	55	24	17	4
New York, Pennsylvania	68	13	12	7
Lake States	60	8	26	6
Michigan	54	14	22	10
Minnesota	56	9	27	8
Wisconsin	67	4	26	3
Corn Belt	65	10	21	4
Illinois	70	11	14	5
Indiana	63	16	17	4
Iowa	60	7	29	4
Northern Plains	67	9	18	6
Kansas	62	13	18	7
Nebraska	76	6	14	4
North Dakota	56	11	27	6
South Dakota	73	8	12	7
Appalachia	63	17	14	6
Kentucky	62	11	17	10
North Carolina	79	7	12	2
Tennessee	50	31	14	5
Southeast	65	12	18	5
Georgia	64	6	22	8
Delta	60	11	22	7
Arkansas	65	11	17	7
Mississippi	59	12	25	4
Southern Plains	67	15	14	4
Oklahoma	58	19	17	6
Texas	70	13	12	4
Mountain	69	11	13	7
Colorado	73	10	10	7
Idaho, Montana, Utah, Wyoming	68	9	17	6
Arizona, Nevada, New Mexico	63	22	5	10
Pacific	64	13	16	7
California	66	13	13	8
Washington	59	14	21	6

^{1/} Virginia and West Virginia are usually considered to be in the Appalachian region. See figure 15 for explanation of terms.

improved the most in the Northern Plains, with the share in the marginal solvency category declining from 31 percent to 18 percent. Farms in the Lake States were most likely in that category at the end of both years. The Southeast had the most improved incomes, with 21 percent in the marginal income category in 1986 compared with 12 percent in 1987.

Regional summaries can mask variations across States. We summarized financial data for individual States (where the data met specific criteria) and for groups of States (where data were insufficient for reporting at the State level). Almost 80 percent of North Carolina farms were in a favorable financial position, mainly because of strong tobacco incomes. Farms in Tennessee, with only 50 percent in a favorable financial position, were least likely to be succeeding. Yet, both States are in the Appalachian region, where 63 percent of farms were classified as vulnerable. Similar variations occurred in the Northern Plains region, with South Dakota and Nebraska farms in relatively favorable positions but not North Dakota operations.

Four States and one group of States had farms substantially more likely to be in the marginal income category than in the marginal solvency category, with the largest differences found in Tennessee, Florida, and Nevada/Arizona/New Mexico. Iowa had the largest share of farms in the marginal solvency group, while Tennessee led in the marginal income category. Ten percent of all farms were vulnerable in Michigan, Kentucky, and the Nevada/Arizona/New Mexico group, compared with just 2 percent in North Carolina.

Nearly 40 percent of vulnerable commercial farms, 12,000 in all, grew primarily cash grains in 1987 (fig. 17). Over half of the vulnerable farms were located in the Northern Plains, Corn Belt, and the Lake States regions.

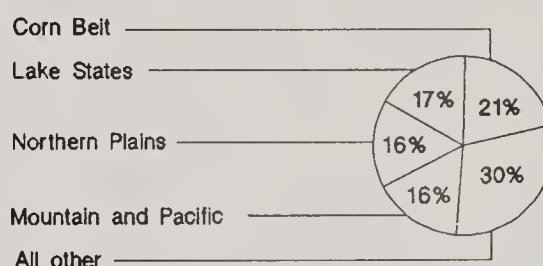
Importance of the Local Farm Economy

Farms located in many farm-dependent counties produce chiefly cash grains and other commodities that are traded in

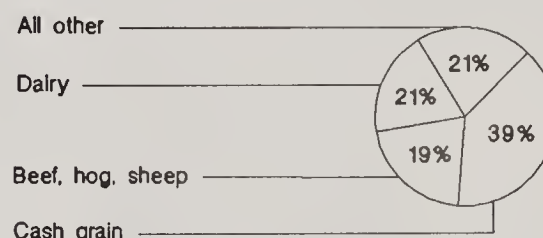
Figure 17

Distribution of financially vulnerable commercial farms, 1987¹

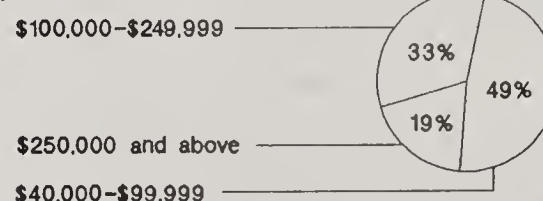
By farm production region



By production specialty



By economic sales class



^{1/} Vulnerable farms have a debt/asset ratio greater than 0.4 and negative income (see fig. 15).

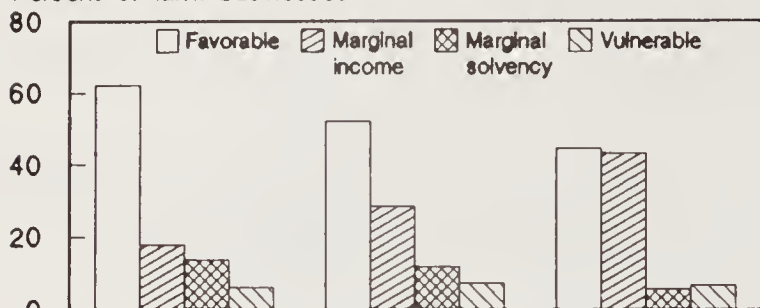
fluctuating international markets. Fewer nonfarm uses exist for land and labor in farm-dependent counties, magnifying the vulnerability to changes in global patterns of supply and demand. Farm-dependent counties are defined as those where agriculture contributed at least 20 percent of the county's labor and proprietor income (LPI). Farm-important counties had 10-20 percent of LPI contributed by farming, and nonfarm-dependent counties had under 10 percent. In nonfarm-dependent areas, farm households had more favorable financial positions than farm businesses in 1987.

Farm businesses were more likely to have a favorable financial position in 1987 in farm-dependent and farm-important counties than in nonfarm-dependent counties. As farm dependence increased, the tendency for farms to have solvency-related problems increased and income-related problems declined (fig. 18).

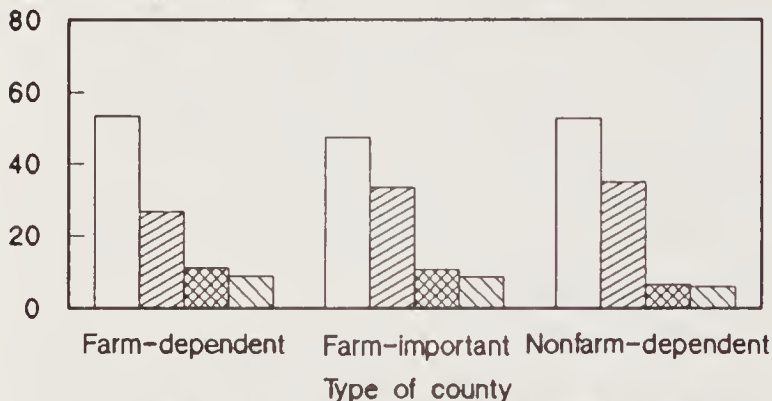
Figure 18

Financial position of all farms, by agricultural dependence, 1987¹

Percent of farm businesses



Percent of farm households



^{1/} The financial position of farm businesses was determined by using net cash farm income and the debt/asset ratio, while the financial position of farm households was determined by using net cash household income and the debt/asset ratio. Farm-dependent counties had at least 20 percent of labor and proprietor income from farming and farm-important counties had 10-20 percent. Sources: 1987 Farm Costs and Returns Survey and Bureau of Economic Analysis.

Operations are often larger, more capital-intensive, and carry larger debt loads in farm-dependent counties. Declines of land values in recent years contributed to high debt/asset ratios in farm-dependent counties. Farms tend to be smaller and farm incomes lower in nonfarm-dependent counties. A diverse economic base provides nonfarm employment opportunities which help farm households meet living expenses.

LINKAGES OF AGRICULTURE TO OTHER SECTORS

The farm sector's share of value added to the domestic economy declined in 1987. Domestic demand for food grew slightly, according to the food consumption index. Exports of agricultural commodities increased, with value rising less than volume.

The Food and Fiber System

Input-output (I/O) analysis can estimate the contribution of the farm sector to national income and employment by tracing the determination of farm income from the domestic and foreign demand for agricultural commodities.

An I/O analysis of final user demands (food, clothing and shoes, tobacco, exports, inventory change, and net Government purchases) yields estimates of total business activity needed throughout the economy to support the delivery of these demands. The total of the contributions to total business activity from each sector defines the food and fiber system.

The food and fiber system accounted for \$705 billion (15.6 percent) of the total value added in the domestic economy in 1987 (table 28). Value added measures a sector's contribution to the market value of final goods and services, and is the share of the value of the product that remains in the sector as a type of income -- wage, interest, or profit.

Value-added has risen steadily in the nonfarm sectors of the food and fiber system, and the increases have been big enough to keep the dollar value of total food and fiber value-added rising in all years except 1983. However, declines in farm sector value-added have combined with the higher growth rate of other sectors of the economy to push the food and fiber share of value-added downward since 1982.

Over 20 million people worked in the food and fiber system in 1987 (table 29). Within the system, the farm sector provided employment for 2 million workers, the same as in 1986 but lower than the employment levels of the early 1980's. Nonfarm food and fiber system employment fell slightly from 18.2 million workers in 1986 to 18.1 million in 1987, down 1.1 million workers from the peak 1982 level.

The food and fiber system share of total employment has steadily declined, from 21.5 percent in 1975 to 16.7 percent in 1987. The farm sector share has seen a

Table 28--Value-added in the food and fiber system, selected years, 1975-87

Item	1975	1980	1982	1984	1985	1986	1987
<u>Billion dollars</u>							
Value-added:							
Farm sector	43.3	55.1	75.1	64.5	71.6	58.8	55.8
Nonfarm sectors	282.4	444.8	536.2	595.9	627.8	635.2	649.4
Food processing	38.7	56.0	70.0	75.6	83.8	83.8	81.5
Manufacturing	57.0	83.0	97.5	101.5	102.3	102.7	100.5
Transportation, trade, and retailing	96.8	157.5	188.1	209.7	220.9	223.9	230.5
Restaurants	25.7	42.0	48.1	55.7	57.5	60.4	64.9
All other	64.2	106.3	132.5	153.4	163.3	164.4	172.0
Total food and fiber <u>1/</u>	325.7	499.9	611.3	660.4	699.4	694.0	705.2
Total domestic economy	1,598	2,732	3,166	3,772	4,015	4,240	4,527
<u>Percent of value-added</u>							
Farm sector	2.7	2.0	2.4	1.7	1.8	1.4	1.2
Nonfarm sectors	17.7	16.3	16.9	15.8	15.6	15.0	14.3
Total food and fiber <u>1/</u>	20.4	18.3	19.3	17.5	17.4	16.4	15.6
Total domestic economy	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Totals may not add due to rounding.

Table 29--Employment in the food and fiber system, selected years, 1975-87

Item	1975	1980	1982	1984	1985	1986	1987
<u>Million workers</u>							
Employment:							
Farm sector	3.0	2.6	2.6	2.7	2.3	2.0	2.0
Nonfarm sectors	17.2	18.9	19.2	18.7	18.7	18.2	18.1
Food processing	1.5	1.5	1.6	1.4	1.5	1.4	1.3
Manufacturing	3.2	3.4	3.3	3.0	2.9	2.7	2.7
Transportation, trade, and retailing	5.7	6.4	6.6	6.6	6.7	6.6	6.6
Restaurants	3.1	3.5	3.5	3.6	3.6	3.6	3.7
All other	3.7	4.0	4.2	4.1	4.1	3.9	3.9
Total food and fiber <u>1/</u>	20.2	21.4	21.8	21.4	21.0	20.2	20.1
Total domestic economy	93.8	106.9	110.2	113.5	115.5	117.8	119.9
<u>Percent</u>							
Employment:							
Farm sector	3.2	2.4	2.4	2.4	2.0	1.7	1.6
Nonfarm sectors	18.3	17.7	17.5	16.5	16.2	15.4	15.1
Total food and fiber <u>1/</u>	21.5	20.0	19.8	18.8	18.2	17.1	16.7
Total domestic economy	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Totals may not add due to rounding.

similar slide, from 3.2 percent to 1.6 percent. Labor productivity indices have nearly doubled for the farm sector since 1982, growing faster than the volume of demand. Fewer labor hours are needed to produce the required level of output.

Adjusting estimated employment needs in the farm sector for these gains in labor productivity drove down the employment requirements to support the 1987 level of final demand for farm products. No empirical evidence suggests that 700,000 farmworkers actually left the food and fiber system from 1984 to 1987 as is indicated in table 29. Yet, published estimates of farm labor productivity and of domestic and foreign demand support this drop in the estimated number of workers required to meet annual demand for agricultural products.

Several factors contributed to the real and relative declines of the food and fiber sector. The main component of the demand for farm products, personal consumption of food, has shown very little growth. The population of the United States has grown relatively slowly during the past 5 years, and consequently, the inflation-adjusted demand for food also has risen only slightly, even dropping in 1987.

Foreign demand for U.S. food and fiber products has not significantly added to the sluggish growth of domestic demand. The real value of nonagricultural exports grew 10 percent after 1985, while the trade-weighted value of the U.S. dollar declined 31 percent from the 1985 high. However, real agricultural exports increased just 7 percent and the real trade-weighted exchange rate index for agriculture declined 18 percent after 1985. Stagnant food demand, increased labor productivity, and other economic trends of the late 1980's combined to make the food and fiber system a shrinking sector of the domestic economy.

Food Consumption

The index of per-capita food consumption is probably the best available measure of change in overall consumption of food at

the retail level. It is a quantity index weighted by average retail prices during a base period. The index measures quantity changes, and reflects changes in the quality of foods consumed, such as shifts from lower to higher priced foods. A price-weighted index is superior to a simple index derived from total poundage of foods consumed because it combines various foods on the basis of their relative economic importance, reflecting consumer preference and the costs of production and marketing.

The index of crop product consumption rose 17 percent during 1967-87, while the index of all animal product consumption increased 3.5 percent (table 30). Consumption of most categories of foods, particularly fats and oils, vegetables, grain products, and sweeteners, has risen steadily in the past 20 years. Fruit consumption jumped in the mid-1980's, and Americans ate less red meat, eggs, fluid milk and cream, and animal fats. In 1987, the index of animal product consumption decreased 0.3 percent because of declines in per-capita consumption of beef, eggs, whole milk, butter, lard, and edible tallow.

Per-capita consumption (on a retail-weight basis) of both red meat and beef was lower in 1987 than it had been since the early 1960's. For the first time, Americans consumed more poultry (chicken and turkey) per capita than beef, 78 pounds versus 73 pounds. Consumption of fishery products in 1987 was a record 15.4 pounds, up 45 percent from 1967 and 21 percent higher than 1977. Increases in poultry and fish consumption have more than offset declines in red meat consumption, pushing total meat consumption to record high levels.

Americans are again eating more dairy products. After two decades of declining or stagnant per-person consumption, a turnaround began in the early 1980's. Since 1981, consumption of lowfat milk, cheese, and yogurt has increased at rates that more than offset decreased consumption of whole milk and some other dairy products. The overall average consumption of dairy products rose 11 percent

Table 30--Annual per-capita food consumption, retail weight equivalent, selected years, 1967-87 1/

Item	1967	1977	1985	1986	1987
<u>1982-84=100</u>					
Food consumption index:					
All food	96.5	99.1	104.0	104.8	105.5
Animal products	99.9	101.7	103.8	103.7	103.4
Crop products	92.5	95.8	104.3	106.2	108.1
<u>Pounds per capita</u>					
Food group:					
Red meat	146.6	151.9	144.1	140.2	135.0
Beef	79.8	91.4	78.8	78.4	73.4
Pork	60.0	55.8	62.0	58.6	59.2
Poultry	45.0	52.9	69.7	72.0	77.8
Chicken	36.3	43.8	57.6	58.7	62.7
Turkey	8.7	9.1	12.1	13.3	15.1
Fish and shellfish	10.6	12.7	14.4	14.7	15.4
Eggs	40.8	33.9	32.2	31.7	31.6
All dairy products <u>2/</u>	581.4	541.1	592.7	590.6	598.2
Fluid milk and cream <u>3/</u>	282.5	258.1	238.5	237.5	235.7
Whole milk	239.5	167.7	122.7	115.4	109.9
Lowfat milk	36.5	82.5	104.6	110.4	113.6
Yogurt	.5	2.4	4.0	4.3	4.6
Cheese <u>4/</u>	10.0	16.0	22.5	23.0	24.0
Fats and oils	49.2	53.0	64.0	64.1	62.7
Salad/cooking oils	12.7	19.1	23.5	24.1	25.2
Shortening	15.9	17.2	22.8	22.0	21.3
Fresh fruit	79.4	79.1	86.3	93.2	98.6
Fresh vegetables <u>5/</u>	63.4	68.1	78.8	79.9	78.6
Flour and cereal products	146.1	148.2	159.4	162.7	169.3
Sugar and sweeteners <u>6/</u>	123.1	133.4	149.3	147.7	151.6
Refined sugar <u>7/</u>	98.5	94.2	62.5	59.7	61.6
Corn sweeteners <u>6/</u>	16.2	31.2	66.5	67.1	68.8
Low-calorie sweeteners <u>8/</u>	7.0	6.6	18.1	18.5	19.0
<u>Gallons per capita</u>					
Coffee	36.3	24.5	26.7	26.7	26.5
Soft drinks	18.2	25.6	29.1	30.3	N/A
Beer	16.8	22.4	23.7	24.0	23.8

N/A = Not available.

1/ All quantity data are retail-weight equivalents unless otherwise stated. 2/ Milk equivalent, fat content basis. 3/ Product-weight basis. 4/ Natural equivalent basis. Excludes full-skim American, cottage, pot, and baker's cheese. 5/ Includes asparagus, broccoli, lettuce, tomatoes, onions, carrots, celery, cauliflower, and corn. 6/ Dry-weight basis. 7/ Includes refined sugar in imported blends and mixtures. 8/ Sugar-sweetness equivalent.

during 1981-87. Sharply rising consumer incomes and falling dairy prices, relative to other foods, generated most of the increase in dairy consumption. However, for specific products, namely cheese and fluid milk, promotional efforts have helped boost sales.

(October 1986-September 1987) totaled \$27.9 billion and 129.2 million tons, gaining \$1.6 billion and 19.7 million tons. Preliminary figures for fiscal year 1988 indicated another \$6.5-billion increase in value and a 17-million ton increase in quantity.

U.S. Agricultural Exports

U.S. agricultural exports rose in both value and volume in fiscal year 1987 for the first time in nearly a decade (tables 31 and 32). Exports for fiscal year 1987

Record exports of value-added products accounted for virtually all of the increase in fiscal year 1987. Exports of value-added products, such as processed meats, vegetables, fruits, and nuts, not traditional major export items, rose \$1.2

Table 31--Value of U.S. agricultural exports, selected fiscal years, 1981-87

Commodity	1981	1985	1986	1987	Change 1/		
					1985-86	1986-87	
	- - -	<u>Billion dollars</u>		- - -	- -	<u>Percent</u>	- -
Grains and feed	21.9	13.3	9.5	9.1	-29	-4	
Corn, excluding products	9.9	5.8	3.3	3.0	-43	-9	
Wheat, including products	7.7	4.5	3.5	3.1	-22	-11	
Rice, paddy, milled	1.5	.7	.6	.5	-14	-17	
Other	2.8	2.3	2.1	2.5	-9	19	
Oilseeds and products	9.5	6.2	6.3	6.3	1	0	
Soybeans	6.2	3.9	4.2	4.2	8	0	
Soybean oil	.5	.6	.3	.2	-48	-33	
Oilcake and meal	1.7	.9	1.1	1.3	22	18	
Other	1.1	.8	.7	.6	-12	-14	
Animals and products	4.0	4.1	4.4	5.0	7	14	
Hides and skins	1.0	1.3	1.4	1.7	15	21	
Meat and products	.9	.9	1.0	1.3	12	30	
Oils, greases, fats	.8	.6	.5	.4	-17	-20	
Poultry meats	.5	.3	.3	.4	10	33	
Dairy products	.3	.4	.4	.5	4	25	
Cotton, excluding linters	2.3	1.9	.7	1.4	-63	100	
Fruits and preparations	1.5	1.2	1.2	1.5	3	25	
Vegetables and preparations	1.4	.9	1.0	1.2	11	20	
Nuts and preparations	.6	.7	.7	.8	-1	14	
Tobacco, unmanufactured	1.4	1.6	1.3	1.2	-19	-8	
Total	43.8	31.2	26.3	27.9	-16	6	

1/ Percentage changes are computed from data before rounding and may not correspond to the figures shown in the table.

Source: U.S. Department of Agriculture, Economic Research Service. Foreign Agricultural Trade of the United States, 1987 Fiscal Year Supplement, May 1988, p. 4, 6-7.

billion to \$11.1 billion in fiscal year 1987. Falling bulk exports (wheat, corn, and soybeans) accounted for nearly all of the \$17.5-billion decline in U.S. agricultural export value during 1981-86.

A substantial amount of resources in the United States is used to produce agricultural commodities for export. During the 1970's, land formerly idled came back into production. More advanced inputs were applied to increase output per acre. Fourteen percent of the value of domestic production was sold overseas in 1987, the

same as in 1986, compared with a peak of 24 percent in 1981 (table 33). Production from one of every three acres harvested is exported.

Japan remained the largest U.S. market for the 25th consecutive year with sales of \$5.6 billion (table 34). Rounding out the top 10 markets in descending order were: the Netherlands, Canada, South Korea, Taiwan, West Germany, Mexico, Egypt, Italy, and the United Kingdom. Soviet purchases of \$660 million were at their lowest level in 12 years.

Table 32--Volume of U.S. agricultural exports, fiscal years, 1984-87

Commodity	1984	1985	1986	1987	Change 1/	
					1985-86	1986-87
	- - - -	<u>Million tons</u>		- - - -	- -	<u>Percent</u> - -
Grains and feed	110.9	93.9	74.4	90.4	-20	22
Corn	48.9	46.4	31.1	39.3	-33	26
Wheat	42.2	28.5	25.5	28.2	-10	11
Rice	2.2	2.0	2.4	2.5	20	4
All other	17.6	17.0	15.4	20.4	-9	32
Oilseeds and products	27.4	23.8	27.6	29.7	16	8
Soybeans	19.5	16.6	20.1	21.3	21	6
Soybean oil	1.0	.8	.6	.5	-25	-17
Oilcake and meal	4.6	4.6	5.6	6.8	22	21
All other	2.3	1.8	1.3	1.1	-28	-15
Animal products	2.4	2.3	2.6	2.6	13	0
Meat and products	.4	.4	.5	.5	25	0
Oils, greases, fats	1.3	1.2	1.4	1.2	17	-14
Poultry meats	.2	.2	.3	.4	50	33
Dairy products	.4	.4	.5	.4	25	-20
Cotton, excluding linters	1.5	1.3	.5	1.3	-61	160
Fruits and preparations, including juices	1.5	1.4	1.5	1.7	7	13
Vegetables and preparations	1.6	1.4	1.4	1.6	2	14
Nuts and preparations	.4	.5	.5	.4	2	-20
Tobacco, unmanufactured	.2	.3	.2	.2	-30	0
Total	146.8	125.8	109.5	129.2	-13	18

1/ Percentage changes are computed from data before rounding and may not correspond to the figures shown in the table.

Source: U.S. Department of Agriculture, Economic Research Service. Foreign Agricultural Trade of the United States, November/December 1986, and November/December 1987, p. 6, and 1987 Fiscal Year Supplement, May 1988, p. 8-9.

Table 33--Share of U.S. farm production entering foreign markets, calendar years, 1980-87

Year	Gross cash income 1/	Value of U.S. agricultural exports 2/	Exported share of domestic production 3/
	- - - - <u>Billion dollars</u> - - - -		<u>Percent</u>
1980	143.3	41.2	23
1981	146.0	43.3	24
1982	150.6	36.6	19
1983	150.4	36.1	19
1984	155.2	37.8	19
1985	156.8	29.0	15
1986	152.0	26.2	14
1987	160.4	28.6	14

1/ Gross cash income is the sum of cash receipts, direct payments, and farm-related income. 2/ Value of agricultural exports multiplied by 0.8 to bring the value of exports to the farm level. 3/ The ratio of the farm-level value of exports to gross cash income.

Table 34--Principal importers of U.S. agricultural products, fiscal years, 1985-87

Country	1985	1986	1987	Change, 1986-87
	- - - - <u>Billion dollars</u> - - - -			<u>Percent</u>
Japan	5.41	5.14	5.55	8
Netherlands	1.87	2.04	1.95	-4
Canada	1.62	1.47	1.78	21
South Korea	1.41	1.28	1.69	32
Taiwan	1.23	1.11	1.35	22
Mexico	1.44	1.11	1.21	9
West Germany	.94	1.00	1.27	27
Egypt	.89	.87	.76	-13
Italy	.67	.68	.73	7
United Kingdom	.63	.63	.66	5

Source: U.S. Department of Agriculture, Economic Research Service. Foreign Agricultural Trade of the United States, Fiscal Year 1987 Supplement, May 1988, p. 32.

Centrally planned economies (Eastern Europe, USSR, and China) reduced their purchases of U.S. agricultural products by \$300 million. U.S. sales to developed countries increased by \$1 billion and sales to developing countries were up by \$780 million.

Slow world economic growth had reduced the level of world trade during 1981-83. Exports of agricultural commodities (and most other commodities) fell for the United States and most other countries. However, as the world economy began to recover in 1983, a resurgence in world trade varied across countries and commodities. The United States recovered more slowly than the rest of the world, and agricultural exports recovered more slowly than other commodities. The relatively strong dollar made U.S. exports more expensive. At the same time, increased foreign production both in importing countries and competing exporting countries and foreign exchange constraints reduced demand for U.S. exports.

U.S. bulk exports were particularly weak after 1983, a factor that helped shape the Food Security Act of 1985. The 1985 Act lowered support prices for major grains and expanded export promotion programs.

The export turnaround, spurred by the new U.S. export programs such as the Export Enhancement Program (EEP) and Targeted Export Assistance (TEA) and 2 years of the dollar's steady decline on foreign exchange markets, regained some of the losses of the 1980's (table 35).

Table 36 shows a composite exchange rate index that considers trade volume and domestic inflation rates of importing countries. The indices are real percentage changes in currency units per U.S. dollar. Currencies of 38 countries are weighted by the proportion of U.S. agricultural exports each country purchased and adjusted for inflation relative to the U.S. Consumer Price Index. Agricultural trade indices for each commodity are based on the currencies of countries which import the commodity.

Food and feed grains continued to account for the major share of export volume, providing 54 percent of the fiscal year 1987 total, down from 60 percent in 1986. Wheat exports rose 10 percent, or 2.7 million tons, as export prices fell 20 percent to \$102 a ton. The EEP proved crucial in increasing U.S. wheat exports to the USSR, China, Iraq, Eastern Europe, and North Africa by offering substantial discounts to foreign buyers.

Table 35--Foreign currency units per U.S. dollar, 1984-88

Item	Japanese yen	Dutch guilder	Canadian dollar	Deutsch mark
Average, 1984	237.6	3.209	1.295	2.847
Average, 1985	238.3	3.319	1.365	2.942
Average, 1986	168.3	2.447	1.389	2.169
Average, 1987	144.5	2.024	1.325	1.796
1988:				
January	127.6	1.857	1.284	1.654
February	129.1	1.904	1.268	1.697
March	127.0	1.882	1.249	1.676
April	124.9	1.875	1.235	1.671
May	124.7	1.897	1.237	1.693

Source: U.S. Department of Agriculture, Economic Research Service, Foreign Agricultural Trade of the United States, June 1988.

Feed grain exports rose 31 percent, or 11.4 million tons, as export prices fell 32 percent to \$78 a ton. The feed grains mentioned here are corn, sorghum, barley, and oats. The EEP raised barley exports by more than 2 million tons through sales to Saudi Arabia. Most of the 11.4-million ton increase came in corn exports.

Poor production of feed grains in several competing exporting countries increased U.S. sales opportunities. Argentina, Australia, and Thailand experienced a decline in output, forcing them to reduce exports. U.S. feed grain exports to developing countries rose 10.3 million tons in fiscal year 1987.

Efforts to restore competitiveness through new farm legislation affected U.S. exports of oilseeds and products less than exports of other bulk commodities in fiscal year 1987 because oilseeds, primarily soybeans and sunflower seed, and products (meal and oil), were in a more competitive position than grains. Because the history of U.S. and foreign policies is more favorable to U.S. oilseed competitiveness, the export volume of U.S. oilseeds and products in fiscal year 1987 was only 16 percent lower than the 1980 peak of 35.6 million tons. Both wheat and feed grain export volumes were 35 percent below the peak levels of the early 1980's.

Table 36--Real trade-weighted dollar index of exchange rates, selected years, 1970-87

Item	1970	1975	1980	1985	1986	1987
	<u>1980=100</u>					
Agricultural trade	136.8	105.4	100.0	135.2	118.4	110.4
Soybeans	155.3	109.4	100.0	146.6	119.4	106.1
Wheat	119.2	101.6	100.0	130.0	121.7	121.2
Corn	144.4	107.3	100.0	131.3	110.2	99.8
Cotton	138.0	109.3	100.0	133.0	115.7	107.2

Source: U.S. Department of Agriculture, Economic Research Service, Agricultural Outlook, October 1988, p.23.

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